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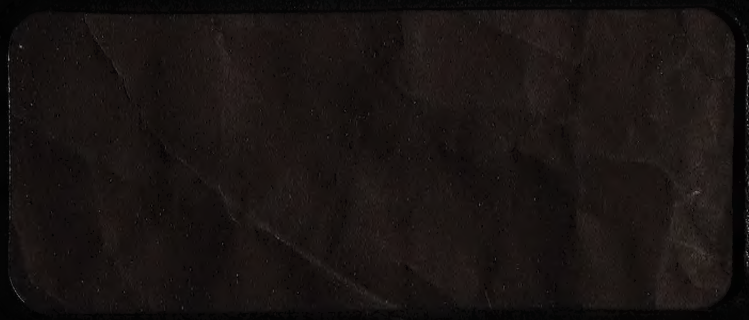

MICROWAVE CAVITY
LABORATORIES
LA GRANGE, ILLINOIS

HANDBOOK OF OPERATING INSTRUCTIONS

MCL Model 10358 RF Power Amplifier

38A1109

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1.0 INTRODUCTION

1.1 This manual contains pertinent information concerning the physical, mechanical, electrical characteristics and operation of the MCL Model 10358 RF Amplifier using the MCL Model 10359, 10363, 10364, and 10365 plug-in modules.

2.0 EQUIPMENT DESCRIPTION

2.1 Purpose

2.2 The MCL Model 10358 RF Power Amplifier, when used with the plug-in heads listed herein, is a VHF-UHF system capable of delivering 200 Watts CW in the frequency range of 10 MHz to 500 MHz and 100 Watts CW in the frequency range of 500 MHz to 1000 MHz. The frequency spectrum can be covered utilizing four easily installed, RF Amplifier plug-in heads. The basic MCL Model 10358 RF Amplifier/Power Supply rack supplies all the necessary operating functions to the plug-in heads. -- Only an external RF drive source and primary power is required for complete system operation. The relatively high power output of the MCL Model 10358 RF Power Amplifier makes it a valuable and versatile aid in antenna evaluation, calibration of power measuring equipment, amplifier drive source and other applications requiring more power output than available from milliwatt signal sources.

2.3 The basic MCL Model 10358 RF Amplifier/Power Supply drawer accepts one plug-in RF Amplifier module; additional storage

for these plug-in RF Amplifier modules is provided by the MCL Model 10361 storage rack. The MCL Model 10361 storage rack also contains a storage drawer to provide additional space for auxilliary items.

TABLE I

Plug-In Module	Frequency Range	Power Output
Model 10359	10 MHz to 50 MHz	200 Watts Min.
Model 10363	50 MHz to 200 MHz	200 Watts Min.
Model 10364	200 MHz to 500 MHz	200 Watts Min.
Model 10365	500 MHz to 1000 MHz	100 Watts Min.

Size: 19 in. wide, 15½ in. high, 21¼ in. deep

Weight: Less than 143 pounds

Input Power: 115 VAC ±10%, 50-60 Hz, 800 Watts Nominal

Frequency:

Calibration - Direct Reading, ±20% 10 MHz to 200 MHz
±10% 200 MHz to 1000 MHz

Stability - ±0.002% for 10 Minutes after 2 Hours stabilization at constant power and frequency

Tuning - 10 MHz to 200 MHz Input and Output
200 MHz to 1000 MHz Single Control

Power:

Stability - ±0.20 dB per Hour after 2 Hours stabilization at a constant power and frequency

Metering - Front Panel Meter reads forward power

on 250 Watt Scale, and reflected power on 25 Watt Scale.

Sampling - 10 MHz to 50 MHz 43 db ±3 db below main output

50 MHz to 1000 MHz 33 db ±3 db below main output

2.4 GENERAL DESCRIPTION

2.5 The MCL Model 10358 RF Power Amplifier is housed in a metal cabinet enclosed on all sides. The front panel supplied allows the RF Amplifier to be mounted in a standard 19" wide rack. All controls and external connectors are mounted on the front panel. All plug-in RF Amplifiers contain frequency readout devices, tuning controls, RF input and RF output connectors and auxilliary output sampling port.

2.6 Specifications

2.7 Table I lists the specifications for the RF Power Amplifier.

3.0 CIRCUIT DESCRIPTION

3.1 All circuitry employed in the MCL Model 10358 RF Power Amplifier is contained within the MCL Model 10358 RF Amplifier/ Power Supply Drawer. Only circuitry directly involved with the individual plug-in RF Amplifier modules is inside the plug-in module.--This simplifies the isolation of trouble and maintenance.

3.2 Power Supplies

3.3 Filament Supply - Solid state regulated DC power supply

with output voltage adjustable from 5 VDC Min. to 7 VDC Max. Filament voltage is monitored at test points TP105 and TP106. The voltage level is determined by the setting of R107 and is set at +6.3 VDC

3.4 Screen Supply - Solid state regulated DC power supply with output voltage adjustable from 225 VDC to 250 VDC. The screen voltage is monitored at test points TP103 and TP104. The voltage level is determined by the setting of R106 and is set at +250 VDC.

3.5 Anode Supply - Solid state unregulated DC power supply with a full wave bridge, pye type LC filter configuration with a fixed DC output voltage. TP 101 and TP102 provide a reduced voltage proportional to the anode supply output. A reading of approximately 100 VDC is an indication of satisfactory operation of the anode supply.

3.6 Cooling - Forced air cooling is provided by a blower mounted within the MCL Model 10358 RF Amplifier/Power supply drawer. An air duct is provided to mate with the plug-in RF Amplifier modules. Cooling is provided only to the anode section of the plug-in modules.

3.7 Monitoring Circuits

3.8 Output Power - A single front panel meter is provided to indicate forward or reflected power and is controlled by switch S104 to change the function of the meter. With switch 104 in the "Forward" postion the meter will indicate forward power to 250 Watts full scale. With switch S104 in the "Reflected"

position the meter will indicate reflected power to 25 Watts full scale.

3.9 Current Meter - A single front panel meter is provided to indicate anode, screen and grid current. The function of the meter is controlled through switch S105 . With switch S105 in the grid position the meter will indicate current to 50 mA full scale. With switch S105 in the screen position (plus or minus) the meter will indicate current to 25 mA full scale. With switch S105 in the anode position the meter will indicate current to 250 mA full scale.

3.10 Protective Circuitry

3.11 Interlocks - Two safety interlocks are provided, Switches S106 and S107. Switch S106 functions as a safety interlock on the top cover panel to de-energize the high voltage power supply and return the RF Amplifier to the AC ON mode of operation in the event operation is attempted with the top cover removed. Switch S107 functions as a safety interlock for the plug-in RF Amplifier module and prevents the RF Amplifier from being energized from the AC ON mode until the plug-in RF Amplifier module is fully engaged.

3.12 Air Flow Switch - Switch S108 is provided as an air flow safety switch to protect the RF Amplifier in the event the air supply to the plug-in RF Amplifier modules is cut off. With the air flow switch S108 de-energized the RF Amplifier will remain in the AC ON mode.

3.13 Time Delay Relay - Relay K101 is provided as a two minute time delay relay to insure a sufficient warm-up period for the filaments of the plug-in RF Amplifier module prior to the application of the anode voltage. The MCL Model 10358 RF Power Amplifier will not cycle to the "Standby" mode until the time delay cycle is completed.

3.14 Anode Overcurrent Protection - Relay K104 is provided to protect the MCL Model 10358 RF Power Amplifier from excessive anode current. Relay K104 is adjusted by R102 to energize when anode current in excess of 250 mA is drawn; when the relay K104 is activated the RF Power Amplifier will cycle to the "Fault" mode.

3.15 Screen Overcurrent Protection - Relay K103 is provided to protect the MCL Model 10358 RF Power Amplifier from excessive screen current. Relay K103 is adjusted by R110 to energize when screen current in excess of 25 mA is drawn; when the relay K103 is activated the RF Power Amplifier will cycle to the "Fault" mode.

3.16 VSWR Protection Circuit - The MCL Model 41B1025A VSWR protection circuit provides protection for the MCL Model 10358 RF Power Amplifier when reflected output power is in excess of 25 Watts. The circuit MCL 41B1025A provides R115 and R116 for sensing level adjustments. R116 is used for control of the differential amplifier. This potentiometer is factory set and should not require further adjustment. R115 can vary the VSWR protection level. It is set to have

K108 energized by Q101A and Q101B when reflected output power is in excess of 25 Watts.

3.17 RF Amplifier, Model 10359

The 200 Watt amplifier uses an 8226 tetrode in a grounded grid configuration operating Class B linear in the 10-50 MHz range. The input and output circuits are individually tuned for maximum selectivity.

The RF power is coupled out by the use of an adjustable capacitive probe for optimum coupling on each frequency.

The 8226 tetrode is easily accessible from the top of the plug-in head by removing its cover. The input is a tuned circuit with the line inductance tuned to resonance with the tube input capacitance.

The output is also a tuned circuit with the anode line inductance tuned to resonance with the tube anode capacitance.

3.18 RF Amplifier, Model 10363

This plug-in cavity head is similar to Model 10359 except for the input and output lines in order to tune in the 50-200 MHz range.

3.19 RF Amplifier, Model 10364

The 200 Watt amplifier uses, as the previous models, an 8226 tetrode in a grounded grid configuration operating class B linear in the 200-500 MHz range.

A single control tuning is achieved with this cavity plug-in

head for simultaneous tuning of the input and output lines throughout the frequency range.

Also a preset optimum output coupling was possible through the use of a carefully designed output line transformer section.

3.20 RF Amplifier, Model 10365

The 100 Watt amplifier uses, an 8403 triode in a grounded grid configuration operating class B linear in the 500-1000 MHz range.

A single control tuning is achieved with this cavity plug-in head for simultaneous tuning of the input and output lines throughout the frequency range.

Also a preset optimum output coupling was possible through the use of a carefully designed output line transformer section.

4.0 PREPARATION FOR USE

4.1 UNPACKING

4.2 Remove the MCL Model 10358 RF Power Amplifier and plug-in RF Amplifier modules from the shipping containers and carefully examine the unit for shipping damage. The accessory package should be checked for content against the enclosed packing list and visual inspection of the parts made.

4.3 For damage refer to MCL "Procedure for Loss and/or Damage in Shipment" Form Number AB-101 packed with the unit.

4.4 INITIAL TURN ON PROCEDURE

4.5 To verify or test performance of the MCL Model 10358 RF Power Amplifier the following steps should be taken:

1. Place the RF Power Amplifier in the desired test location.
2. Turn the AC ON switch to the "OFF" position.
3. Connect the primary power input cable into 115 VAC ±10%, 50-60 Hz.
4. Insert the proper plug-in RF Amplifier module
   a. MCL Model 10359 10 MHz to 50 MHz - 200 Watts
   b. MCL Model 10363 50 MHz to 200 MHz - 200 Watts
   c. MCL Model 10364 200 MHz to 500 MHz - 200 Watts
   d. MCL Model 10365 500 MHz to 1000 MHz - 100 Watts
5. Connect the required test equipment as shown in Figure 4-1.
6. Rotate the plug-in RF Amplifier module tuning controls to the desired frequency (Refer to Tables 2, 3, 4, and 5 for proper tuning procedure of the desired plug-in RF Amplifier modules).
7. Turn the AC ON OFF Switch to the "ON" position; the AC ON indicator (AMBER) will activate.
8. Wait for the time delay relay to close (2 minutes); the STANDBY indicator (CLEAR) will activate at the end of the time delay cycle.
9. Activate the HV-ON switch; the ready indicator (RED) will light and the STANDBY indicator (CLEAR) will deactivate. CAUTION: For all plug-in RF Amplifier modules

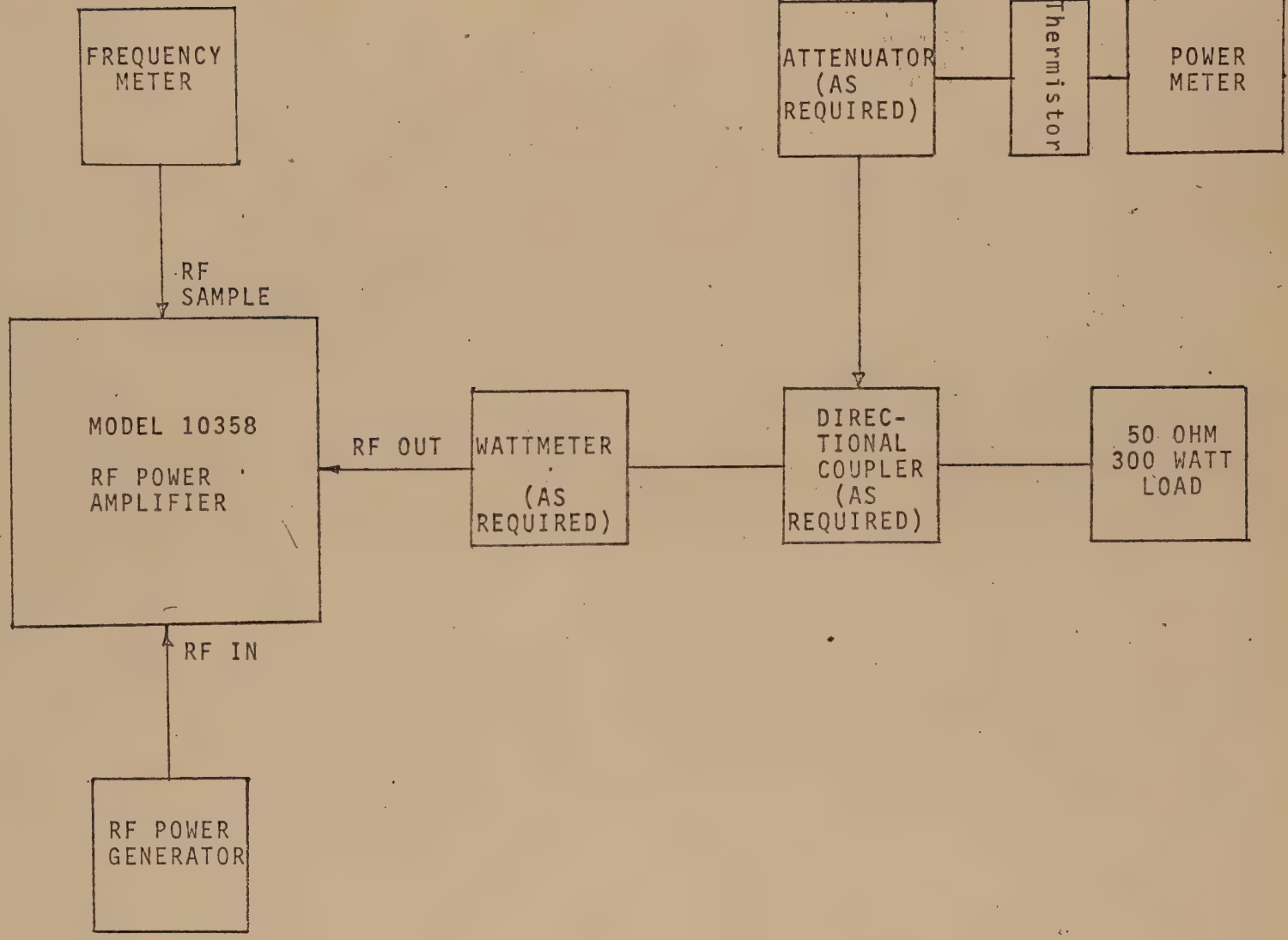


Figure 4-1 TEST SET-UP

--during the operation and tuning of the RF Power Amplifier DO NOT switch the RF Power Amplifier to the STANDBY position with RF drive applied to the RF input jack. A condition of standby is provided for the purpose of RF Power Amplifier shutdown without complete turn off; thus eliminating the waiting of the delay cycle for filament warm up. To place the RF Power Amplifier in the standby mode, remove the RF drive to the input of the RF Power Amplifier and depress the Standby Switch; the ready indicator (RED) will de-activate and the Standby indicator (CLEAR) will activate.

10. Apply RF drive (NOT TO EXCEED 30 WATTS) to the RF input jack of the RF Power Amplifier. Tune the plug-in RF Amplifier module in accordance with the instructions of Tables 2,3,4, and 5. CAUTION: Refer to Tables 2,3,4, and 5 for plug-in RF Amplifier module tuning procedure.

TABLE	PLUG-IN RF AMPLIFIER MODULE				
2	Model 10359	10 MHz	to	50 MHz	@ 200 Watts
3	Model 10363	50 MHz	to	200 MHz	@ 200 Watts
4	Model 10364	200 MHz	to	500 MHz	@ 200 Watts
5	Model 10365	500 MHz	to	1000 MHz	@ 100 Watts

4.6 The initial turn on procedure can be employed to become familiar with the operating characteristics of the Model 10358 RF Power Amplifier.

TABLE 2
TUNING PROCEDURE
MODEL 10359
PLUG-IN R.F. AMPLIFIER MODULE
10MHz to 50MHz

STEP 1 Insert the 10MHz to 50MHz plug-in head into the R.F. Amplifier/power supply panel and secure the plug-in head.

STEP 2 Connect the required test equipment and termination to the "R.F. OUTPUT" Connector.

STEP 3 Turn the R.F. Power Amplifier on. "AC ON" switch to the on position, the "AC ON" indicator light (amber) will activate.

STEP 4 Upon completion of the time delay cycle the R.F. Power Amplifier will switch to the standby mode, and the "STANDBY" indicator light (clear) will activate.

STEP 5 Turn the R.F. Power Amplifier high voltage on by depressing the "HV ON" switch, the standby indicator light (clear) will deactivate and the "READY" indicator light (red) will activate. The R.F. Power Amplifier is now ready to operate.

STEP 6 Apply R.F. drive (no greater than 30 watts) from the R.F. Power Generator to the R.F. Power Amplifier "RF INPUT" connector.

STEP 7 Monitor the frequency input from the R.F. Power Generator to the R.F. POWER Amplifier.

STEP 8 Adjust the "INPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency read out device on the input tuning control.

STEP 9 Adjust the "OUTPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency readout device on the output tuning control.

STEP 10 Adjust the "INPUT TUNING" control for maximum power output as indicated on the R.F. Power Amplifier "R.F. POWER" meter.

STEP 11 Adjust the "OUTPUT TUNING" control for maximum power output as indicated on the R.F. Power Amplifier "RF POWER" meter.

STEP 12 Adjust output coupling control for optimum coupling.

STEP 13 Repeat steps 10, 11 and 12 until the R.F. Power Amplifier power output is peaked for maximum as indicated on the R.F. Power Amplifier "RF POWER" meter.

NOTE (1) The Above procedure is to be followed for all power input levels to the R.F. Power Amplifier.

(2) Always monitor the RF input frequency to the RF Power Amplifier -- a check of R.F. output frequency of the RF Power Amplifier can be made at the"RF SAMPLE" connector. This frequency should be the same as the input frequency to the R.F. Power Amplifier.

TABLE 3
TUNING PROCEDURE
MODEL 10363
PLUG-IN R.F. AMPLIFIER MODULE
50MHz to 200MHz

STEP 1 Insert the 50MHz to 200MHz plug-in head into the R.F. Amplifier/power supply panel and secure the plug-in head.

STEP 2 Connect the required test equipment and termination to the "R.F. OUTPUT" connector.

STEP 3 Turn the R.F. Power Amplifier on. "AC ON" switch to the on position, The "AC ON" indicator light (amber) will activate.

STEP 4 Upon completion of the time delay cycle the R.F. Power Amplifier will switch to the standby mode, and the "STANDBY" indicator light (clear) will activate.

STEP 5 Turn the R.F. Power Amplifier high voltage on by depressing the"HV ON" switch, the standby indicator light (red) will activate. The R.F. Power Amplifier is now ready to operate.

STEP 6 Apply R.F. drive (no greater than 30 watts) from the R.F. Power Generator to the R.F. Power Amplifier "RF INPUT" connector.

STEP 7 Monitor the frequency input from the R.F. Power Generator to the R.F. Power Amplifier.

STEP 8 Adjust the "INPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency read out device on the input tuning control.

STEP 9 Adjust the "OUTPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency readout device on the output tuning control.

STEP 10 Adjust the "INPUT TUNING" control for maximim power output as indicated on the R.F. Power Amplifier "R.F. POWER" meter.

STEP 11 Adjust the "OUTPUT TUNING" control for maximum power output as indicated on the R.F. Power Amplifier "RF POWER" meter.

STEP 12 Adjust output coupling control for optimum coupling.

STEP 13 Repeat steps 11 and 12 until the R.F. Power Amplifier power output is peaked for maximum as indicated on the R.F. Power Amplifier "RF POWER" meter.

NOTE (1) The above procedure is to be followed for all power input levels to the R.F. Power Amplifier.

(2) Always monitor the R.F. input frequency to the RF Power Amplifier -- a check of R.F. output frequency of the RF Power Amplifier can be made at the "RF SAMPLE" connector. This frequency should be the same as the input frequency to the R.F. Power Amplifier.

TABLE 4
TUNING PROCEDURE
MODEL 10364
PLUG-IN RF AMPLIFIER MODULE
200MHz to 500MHz

STEP 1 Insert the 200MHz to 500MHz plug-in head into the R.F. Amplifier/power supply panel and secure the plug-in head.

STEP 2 Connect the required test equipment and termination to the "R.F. OUTPUT" connector.

STEP 3 Turn the R.F. Power Amplifier on. "AC ON" switch to the on position, the "AC ON" indicator light (amber) will activate.

STEP 4 Upon completion of the time delay cycle the R.F. Power Amplifier will switch to the standby mode, and the "STANDBY" indicator light (clear) will activate.

STEP 5 Turn the R.F. Power Amplifier high voltage on by depressing the"HV ON" switch, the standby indicator light (clear) will deactivate and the "READY" indicator light (red) will activate. The R.F. Power Amplifier is now ready to operate.

STEP 6 Apply R.F. drive (no greater than 30 watts) from the R.F. Power Generator to the R.F. Power Amplifier "RF INPUT" connector.

STEP 7 Monitor the frequency input from the R.F. Power Generator to the R.F. Power Amplifier.

STEP 8 Adjust the "OUTPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency read out device on the output tuning control.

STEP 9 Adjust the "OUTPUT TUNING" control for maximum power output as indicated on the R.F. Power Amplifier "RF POWER" meter.

STEP 10 Repeat step 9 until the R.F. Power Amplifier power output is peaked for maximum as indicated on the R.F. Power Amplifier "RF POWER" meter.

NOTE (1) The above procedure is to be followed for all power input levels to the R.F. Power Amplifier.

(2) Always monitor the RF input frequency to the RF Power Amplifier -- a check of R.F. output frequency of the RF Power Amplifier can be made at the "RF SAMPLE" connector. This frequency should be the same as the input frequency to the R.F. Power Amplifier.

TABLE 5
TUNING PROCEDURE
MODEL 10365
PLUG-IN R.F. AMPLIFIER MODULE
500 MHZ TO 1000 MHZ

STEP 1 Insert the 500 MHz to 1000 MHz plug-in head into the R.F. Amplifier/power supply panel and secure the plug-in head.

STEP 2 Connect the required test equipment and termination to the "R.F. OUTPUT" connector.

STEP 3 Turn the R.F. Power Amplifier on. "AC ON" switch to the on position, the "AC ON" indicator light (amber) will activate.

STEP 4 Upon completion of the time delay cycle the R.F. Power Amplifier will switch to the standby mode, and the "STANDBY" indicator light (clear) will activate.

STEP 5 Turn the R.F. Power Amplifier high voltage on by depressing the "HV ON" switch, the standby indicator light (clear) will deactivate and the "READY" indicator light (red) will activate. The R.F. Power Amplifier is now ready to operate.

STEP 6 Apply R.F. drive (no greater than 30 Watts) from the R.F. power generator to the R.F. Power Amplifier "RF INPUT" connector.

STEP 7 Monitor the frequency input from the R.F. Power Generator to the R.F. Power Amplifier.

STEP 8 Adjust the "OUTPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency read out device on the output tuning control.

STEP 9 Adjust the "OUTPUT TUNING" control for maximum power output as indicated on the R.F. Power Amplifier "RF POWER" meter.

STEP 10 Repeat step 9 until the R.F. Power Amplifier power output is peaked for maximum as indicated on the R.F. Power Amplifier "RF POWER" meter.

NOTE (1) The above procedure is to be followed for all power input levels to the R.F. Power Amplifier.

(2) Always monitor the RF input frequency to the RF Power Amplifier -- a check of R.F. output frequency of the R.F. Power Amplifier can be made at the "RF SAMPLE" connector. This frequency should be the same as the input frequency to the R.F. Power Amplifier.

5.0 OPERATION

5.1 All operating controls for the MCL Model 10358 RF Power amplifier are located on the front panel.

5.2 PRELIMINARY ADJUSTMENTS

5.3 Before operating the MCL Model 10358 RF Power Amplifier the following steps must be taken:

1. Place the AC ON Switch in the "OFF" position.
   NOTE: Make sure the AC ON Switch is in the "OFF" position when installing or removing the plug-in RF Amplifier modules.
2. Connect the primary power input plug into 115 VAC ±10%, 50-60 Hz.
3. Connect the RF sample jack to a 50 ohm load (or desired test equipment).
4. Connect the RF output jack to a 50 ohm load (or to the equipment under test).
5. Connect the RF drive source to the RF input jack.
6. Set the RF Power Switch to the Forward position.

5.4 OPERATING PROCEDURE

5.5 To operate the MCL Model 10358 RF Power Amplifier the following procedures must be followed.

PLUG-IN AMPLIFIER MODEL	FREQUENCY RANGE	RF POWER OUTPUT	TUNING PROCEDURE
10359	10 MHz to 50 MHz	200 Watts Min.	Table 6-1
10363	50 MHz to 200 MHz	200 Watts Min.	Table 6-2
10364	200 MHz to 500 MHz	200 Watts Min.	Table 6-3
10365	500 MHz to 1000 MHz	100 Watts Min.	Table 6-4

TUNING PROCEDURE
MODEL 10359
PLUG-IN R.F. AMPLIFIER MODULE
10 MHz to 50 MHz

STEP 1 Insert the 10MHz to 50MHz plug-in head into the R.F. Amplifier/power supply panel and secure the plug-in head.

STEP 2 Connect the required test equipment and termination to the "RF OUTPUT" connector.

STEP 3 Turn the R.F. Power Amplifier on. "AC ON" switch to the on position, the "AC ON" indicator light (amber) will activate.

STEP 4 Upon completion of the time delay cycle the R.F. Power Amplifier will switch to the standby mode, and the "STANDBY" indicator light (clear) will activate.

STEP 5 Turn the R.F. Power Amplifier high voltage on by depressing the "HV ON" switch, the standby indicator light (clear) will deactivate and the "READY" indicator light (red) will activate. The R.F. Power Amplifier is now ready to operate.

STEP 6 Apply R.F. drive (no greater than 30 Watts) from the R.F. Power Generator to the R.F. Power Amplifier "RF INPUT" connector.

STEP 7 Monitor the frequency input from the R.F. Power Generator to the R.F. Power Amplifier.

STEP 8 Adjust the "INPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency read out device on the input tuning control.

STEP 9 Adjust the "OUTPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency readout device on the output tuning control.

STEP 10 Adjust the "INPUT TUNING" control for maximum power output as indicated on the R.F. Power Amplifier "R.F. POWER" meter.

STEP 11 Adjust the "OUTPUT TUNING" control for maximum power output as indicated on the R.F. Power Amplifier "RF POWER" meter.

STEP 12 Adjust output coupling control for optimum coupling.

STEP 13 Repeat steps 10, 11, and 12 until the R.F. Power Amplifier power output is peaked for maximum as indicated on the R.F. Power Amplifier "RF POWER" meter.

NOTE (1) The above procedure is to be followed for all power input levels to the R.F. Power Amplifier.

(2) Always monitor the RF input frequency to the RF Power Amplifier -- a check of R.F. output frequency of the RF Power Amplifier can be made at the "RF SAMPLE" connector. This frequency should be the same as the input frequency to the R.F. Power Amplifier.

TABLE 6-2
TUNING PROCEDURE
MODEL 10363
PLUG-IN R.F. AMPLIFIER MODULE
50 MHZ to 200 MHZ

STEP 1 Insert the 50MHz to 200MHz plug-in head into the R.F. Amplifier/power supply panel and secure the plug-in head

STEP 2 Connect the required test equipment and termination to the "R.F. OUTPUT" connector.

STEP 3 Turn the R.F. Power Amplifier on. "AC ON" switch to the on position; the "AC ON" indicator light (amber) will activate.

STEP 4 Upon completion of the time delay cycle the R.F. Power Amplifier will switch to the standby mode, and the "STANDBY"indicator light (clear) will activate.

STEP 5 Turn the R.F. Power Amplifier high voltage on by depressing the "HV ON" switch, the standby indicator light (red) will activate. The R.F. Power Amplifier is now ready to operate.

STEP 6 Apply R.F. drive (no greater than 30 Watts) from the R.F. Power Generator to the R.F. Power Amplifier "RFINPUT" connector.

STEP 7 Monitor the frequency input from the R.F. Power Generator to the R.F. Power Amplifier.

STEP 8 Adjust the "INPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency read out device on the input tuning control.

STEP 9 Adjust the "OUTPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency readout device on the output tuning control.

STEP 10 Adjust the "INPUT TUNING" control for maximum power output as indicated on the R. F. Power Amplifier "R.F. POWER" meter.

STEP 11 Adjust the "OUTPUT TUNING" control for maximum power output as indicated on the R.F. Power Amplifier "RF POWER" meter.

STEP 12 Adjust output coupling control for optimum coupling.

STEP 13 Repeat steps 10, 11, and 12 until the R.F. Power Amplifier power output is peaked for maximum as indicated on the R.F. Power Amplifier "RF POWER" meter.

NOTE (1) The above procedure is to be followed for all power input levels to the R.F. Power Amplifier.

(2) Always monitor the R.F. input frequency to the RF Power Amplifier -- a check of R.F. output frequency of the RF Power Amplifier can be made at the "RF SAMPLE" connector. This frequency should be the same as the input frequency to the R.F. Power Amplifier.

TABLE 6-3
TUNING PROCEDURE
MODEL 10364
PLUG-IN R.F. AMPLIFIER MODULE
200MHz to 500MHz

STEP 1 Insert the 200MHz to 500MHz plug-in head into the R.F. Amplifier/power supply panel and secure the plug-in head.

STEP 2 Connect the required test equipment and termination to the "R.F. OUTPUT" connector.

STEP 3 Turn the R.F. Power Amplifier on. "AC ON" switch to the on position, the "AC ON" indicator light (amber) will activate.

STEP 4 Upon completion of the time delay cycle the R.F. Power Amplifier will switch to the standby mode, and the "STANDBY" indicator light (clear) will activate.

STEP 5 Turn the R.F. Power Amplifier high voltage on by depressing the "HV ON" switch, the standby indicator light (clear) will deactivate and the "READY" indicator light (red) will activate. The R.F. Power Amplifier is now ready to operate.

STEP 6 Apply R.F. drive (no greater than 30 watts) from the R.F. Power Generator to the R.F. Power Amplifier "RF INPUT" connector.

STEP 7 Monitor the frequency input from the R.F. Power Generator to the R.F. Power Amplifier.

STEP 8 Adjust the "OUTPUT TUNING"control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency read out device on the output tuning control.

STEP 9 Adjust the "OUTPUT TUNING" control for maximum power output as indicated on the R.F. Power Amplifier "RF POWER" meter.

STEP 10 Repeat step 9 until the R.F. Power Amplifier power output is peaked for maximum as indicated on the R.F. Power Amplifier "RF POWER" meter.

NOTE (1) The above procedure is to be followed for all power input levels to the R.F. Power Amplifier.

(2) Always monitor the RF input frequency to the RF Power Amplifier -- a check of R.F. output frequency of the RF Power Amplifier can be made at the "RF SAMPLE" connector. This frequency should be the same as the input frequency to the R.F. Power Amplifier.

TABLE 6-4
TUNING PROCEDURE
MODEL 10365
PLUG-IN R.F. AMPLIFIER MODULE
500MHz to 1000MHz

MHz

STEP 1 Insert the 500MHz to 1000MHz plug-in head into the R.F. Amplifier/power supply panel and secure the plug-in head.

STEP 2 Connect the required test equipment and termination to the "R.F. OUTPUT" connector.

STEP 3 Turn the R.F. Power Amplifier on. "AC ON" switch to the on position, the "AC ON" indicator light (amber) will activate.

STEP 4 Upon completion of the time delay cycle the R.F. Power Amplifier will switch to the standby model, and the "STANDBY" indicator light (clear) will activate.

STEP 5 Turn the R.F. Power Amplifier high voltage on by depressing the"HV ON" switch, the standby indicator light (clear) will deactivate and the"READY" indicator light (red) will activate. The R.F. Power Amplifier is now ready to operate.

STEP 6 Apply R.F. drive (no greater than 30 watts) from the R.F. power generator to the R.F. Power Amplifier "RF INPUT" connector.

STEP 7 Monitor the frequency input from the R.F. Power Generator to the R.F. Power Amplifier.

STEP 8 Adjust the "OUTPUT TUNING" control of the R.F. Power Amplifier to the approximate frequency as indicated by the frequency read out device on the output tuning control.

STEP 9 Adjust the "OUTPUT TUNING" control for maximum power output as indicated on the R.F. Power Amplifier "RF POWER" meter.

STEP 10 Repeat step 9 until the R.F. Power Amplifier power output is peaked for maximum as indicated on the R.F. Power Amplifier "RF POWER" meter.

NOTE (1) The above procedure is to be followed for all power input levels to the R.F. Power Amplifier.

(2) Always monitor the RF input frequency to the RF Power Amplifier -- a check of R.F. output frequency of the R.F. Power Amplifier can be made at the "RF SAMPLE" connector. This frequency should be the same as the input frequency to the R.F. Power Amplifier.

6.0 Maintenance

6.1 Tube Replacement

6.2 Defective or weak tubes should be replaced immediately, continued operation with weak or defective tubes may degrade other components and system performance.

CAUTION When removing or replacing tubes extreme care should be taken to insure proper seating of the tube.

6.3 Plug-in R.F. Amplifier module tubes. The R.F. Power Amplifier tube is located within the R.F. Power Amplifier cavity contained on each of the plug-in modules. Due to the differences in frequency coverage of the plug-in R.F. Amplifier modules cavity construction varies, making unique disassembly procedures necessary for tube replacement.

6.4 Models 10359 and 10363 plug-in R.F. Amplifier modules

(1) Remove the four #4-40X 5/16 Flat Head screws securing the vent assembly to the cavity top plate.

(2) Remove the vent assembly from the cavity top plate.

(3) Remove the RFI Gasket from the cavity top plate

(4) Remove the Tube by rotating clockwise while pulling straight out.

(5) Replace the tube by rotating clockwise while applying pressure straight in.

CAUTION Excercise extreme care when inserting tube to insure proper alignment in tube socket.

(6) Replace RFI Gasket on cavity top plate. Align holes to insure proper seating.

(7) Replace Vent assembly on cavity top plate, align holes to insure proper mating of vent assembly, RFI Gasket and cavity top plate.

(8) Replace the four 4-40X 5/16 Flat Head Screws and secure vent cover assembly, and RFI Gasket to the cavity top plate.

6.5 Models 10364 and 10365 Plug-in R.F. Amplifier modules.

(1) Rotate the output tuning control to the highest frequency indicated on the frequency readout device.

(2) Remove the four 4-40X 1/2 Machine Screws, Lock Washers and Flat Washers securing the vent assembly to the cavity shell.

(3) Remove the vent assembly.

(4) Remove the tube by rotating clockwise while pulling straight out.

(5) Replace the tube by rotating clockwise while applying pressure straight in.

CAUTION Excercise extreme care when inserting tube to insure proper alignment in the tube socket.

(6) Replace the vent assembly on the cavity shell.

(7) Replace the four 4-40X 1/2 Machine Screws, Lock Washers, Flat Washers and secure vent assembly to the cavity shell.

6.6 Cleaning and Lubrication.

6.7 Lubrication and cleaning is recommended at periodic intervals to promote long-life of mechanical parts and insure trouble free operation of the MCL Model 10358 R.F. Power Amplifier. Exterior surfaces may be cleaned using a soft clean cloth moistened with ISOPROPYL alcohol. Interior components are normally kept clean by circulated filtered air, by means of the left hand panel filter assembly. Should any build up of dirt be noted in the interior it may be removed by using a small, bristle brush and then wiped clean with a soft clean cloth moistened with ISOPROPYL Alcohol.

6.8 Filter Cleaning The Filter Assembly located on the left hand panel of the model 10358 R.F. Power Amplifier should be cleaned at least once every 30 days or as often as environmental conditions may require.

6.9 Air Filter Removal The steps listed below should be followed in the removal and cleaning of the Air Filter.

(1) Remove the three 4-40X 7/16 Machine Screws, Lock Washer and Flat Washers securing the filter hold down bracket to the left side panel.

(2) Remove the filter hold down bracket from the left side panel.

(3) Remove the Air Filter by sliding the Air Filter towards the rear panel.

(4) Clean the Air Filter in Hot Water and allow to dry.

(5) Spray filter with Air Kontrol Filter Spray

manufactured by Air-Kontrol Filter Manufacturing Company, Incorporated, Memphis, Tennessee.

(6) Replace Air Filter by sliding Air Filter into position from the rear panel.

(7) Replace the Filter hold down bracket on the left side panel. .

(8) Replace the three 4-40X 7/16 Machine Screws, Lock Washers, Flat Washers and secure the Filter hold down bracket to the left side panel.

6.10 ADJUSTMENTS

6.11 The power supplies contained within the MCL Model 10358 R.F. Power Amplifier contain the majority of the electronic circuitry employed in the basic unit along with adjustments and test points. These power supplies and associated circuitry may require minor alignment after the replacement of components. To insure that specified performance levels are met, the following paragraph contain the necessary information to perform tests and adjustments.

6.12 All test points and adjustments are accessible from the top of the R.F. Power Amplifier when the top cover is removed.

> CAUTION: When the top cover is removed and the top cover safety interlock is energized, voltages in excess of 2200 volts are present. Extreme care should be excercised in servicing this equipment with the high voltage on, since 2200 volts at greater than 200 milliamps is lethal.

6.13 Filament Supply - The filament supply is a solid state regulated DC power supply with the output voltage variable from 5.0VDC to 7.0VDC. Test points TP105 and TP106 are provided to monitor the filament voltage and R107 is provided to adjust the filament voltage level to the required limits. To adjust the filament voltage, the following steps should be observed.

1. Turn the "AC ON" switch of the Model 10358 R.F. Power Amplifier to the "OFF" position.
2. Connect the primary power input plug to 115 VAC-60 Hz

2. Employing a variac to allow control of input power.
3. Insert plug-in R.F. Amplifier Module (all plug-in R.F. Amplifier modules operate at the same filament voltage).
4. Connect the equipment as shown in figure 6.1.
5. Turn the "AC ON" switch of the Model 10358 R.F. Power Amplifier to the "ON" position. The "AC ON" indicator light (amber) will activate.
6. Wait and allow the unit to cycle to the stand by mode, this will occur after the time delay cycle has been completed (approximately 120 seconds). At the end of the time delay cycle the "STANDBY" indicator light (clear) will activate.
7. Insert the filament voltage monitoring device (universal Poly ranger Model USP or equivalent) into test points TP105 and TP106.
8. Loosen lock nut on R107
9. Adjust R107 for 6.3VDC as measured on the filament voltage monitoring equipment.
10. Tighten lock nut on R107
11. Turn "AC ON" switch of the Model 10358 R.F. Power Amplifier to the "OFF" position.

6.14 Screen Supply - The screen supply is a solid state regulated D.C. power supply with the output voltage variable from 225VDC to 250VDC. Test points TP103 and TP104 are provided to monitor the screen voltage and R106 is provided to adjust the screen voltage level to the required limits. To adjust the screen voltage, the following steps should be observed.

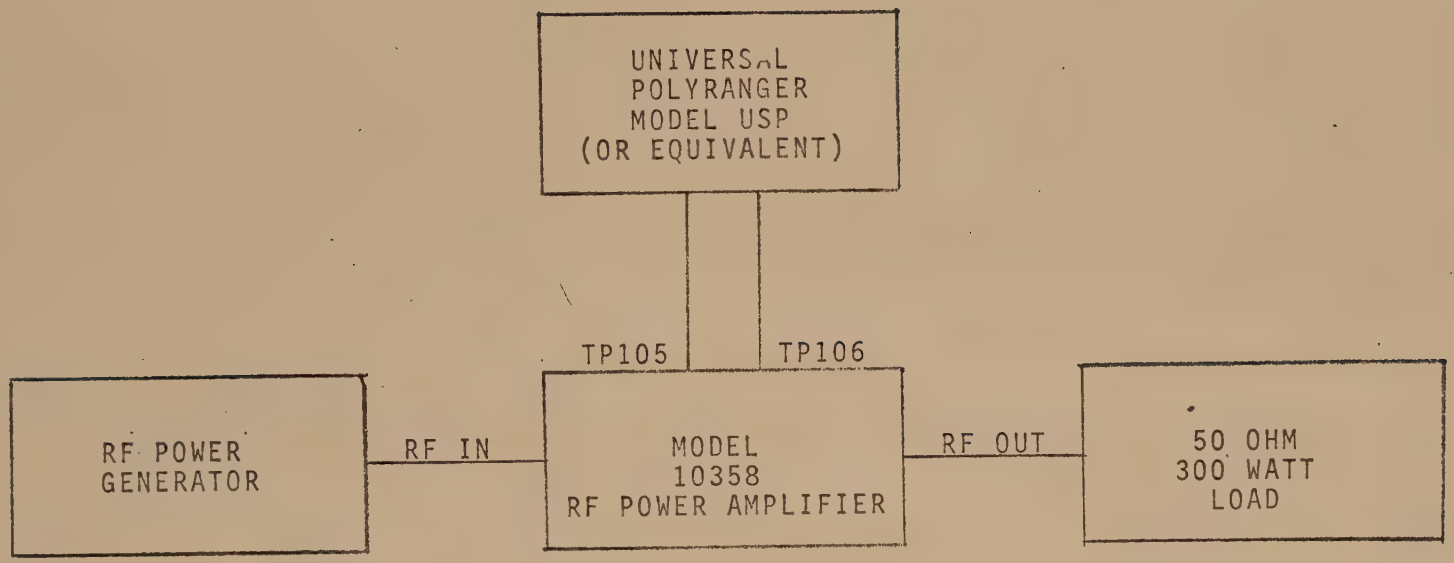

UNIVERSAL
POLYRANGER
MODEL USP
(OR EQUIVALENT)
TP105
TP106
RF POWER
GENERATOR
RF IN
MODEL
10358
RF POWER AMPLIFIER
RF OUT
50 OHM
300 WATT
LOAD

Figure 6-1

1. Turn the "AC ON" switch of the Model 10358 R.F. Power Amplifier to the "OFF" position.
2. Connect the primary power input plug to 115VAC - 60 Hz employing a variac to allow control of input power.
3. Insert plug-in R.F. Amplifier module (Models 10359, 10363 or 10364 TETRODE AMPLIFIERS -NOTE MODEL 10365 EMPLOYS A TRIODE AMPLIFIER).
4. Connect the equipment as shown in figure 6.2.
5. Turn the "AC ON" switch of the Model 10358 R.F. Power Amplifier to the"ON" position. The "AC ON" indicator light (amber) will activate.
6. Wait and allow the unit to cycle to the standby mode, this will occur after the time delay cycle has been completed (approximately 120 seconds) At the end of the time delay cycle, the "STANDBY" indicator light (clear) will activate.
7. Insert the screen voltage measuring devices (Universal Poly ranger Model USP or equivalent) into test points TP103 and TP104.
8. Loosen lock nut on R106.
9. Depress the "HV ON" switch, the "READY" indicator light (red) will activate and the "STANDBY" indicator light (clear) will deactivate.
10. Adjust R106 to 250 VDR as measured on the screen voltage monitoring equipment.
11. Tighten lock nut on R106.

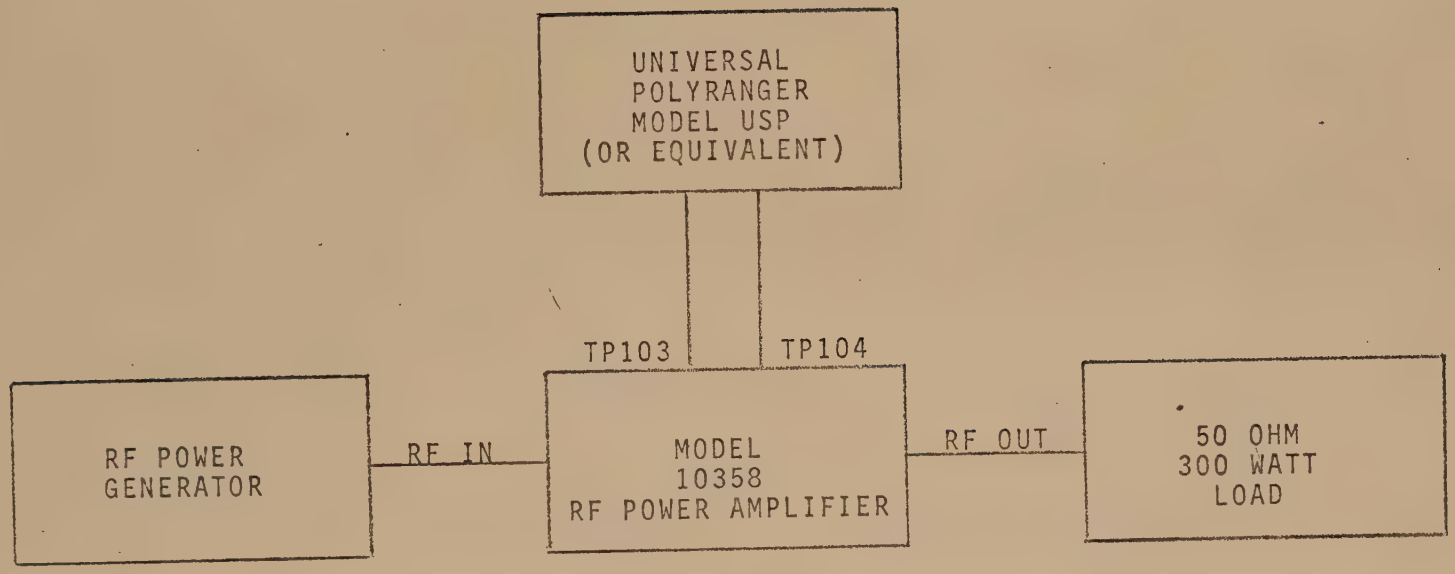

UNIVERSAL
POLYRANGER
MODEL USP
(OR EQUIVALENT)
TP103
TP104
RF POWER
GENERATOR
RF IN
MODEL
10358
RF POWER AMPLIFIER
RF OUT
50 OHM
300 WATT
LOAD

Figure 6-2

12. Depress the "STANDBY" switch, the"READY" indicator light (red) will deactivate and the "STANDBY" indicator light (clear) will activate.

13. Turn the "AC ON" switch of the Model 10358 R.F. Power Amplifier to the "OFF" position.

6.15 Anode Supply - The Anode supply is a solid state unregulated D.C. power supply operating at a fixed output voltage utilizing a full wave bridge and pye type LC filter configuratio Test points TP101 and TP102 are provided to monitor a reduced voltage proportional to the Anode supply voltage. To monitor the Anode supply voltages, the following steps should be observed.

1. Turn the "AC ON" switch of the Model 10358 R.F. Power Amplifier to the "OFF" position.
2. Connect the primary power input plug into 115VAC - 60Hz employing a variac to allow control of input power.
3. Insert desired plug-in R.F. Amplifier module (Models 10359, 10363, 10364 or 10365).
4. Connect equipment as shown in figure 6.3.
5. Turn the "AC ON" switch of the Model 10358 R.F. Power Amplifier to the "ON" position. The "AC ON" indicator light (amber) will activate.
6. Wait and allow the unit to cycle to the standby mode, this will occur after the time delay cycle has been completed (approximately 120 seconds). At the end of the time delay cycle the "STANDBY" indicator light

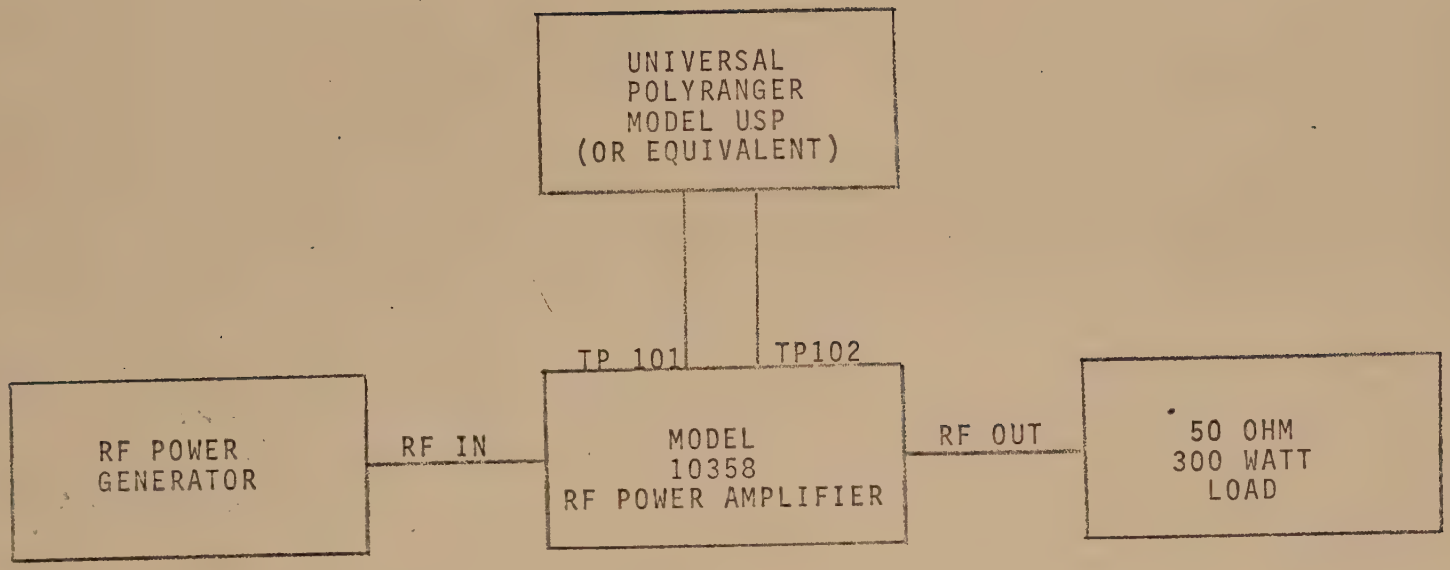

UNIVERSAL
POLYRANGER
MODEL USP
(OR EQUIVALENT)
TP 101
TP102
RF POWER
GENERATOR
RF IN
MODEL
10358
RF POWER AMPLIFIER
RF OUT
50 OHM
300 WATT
LOAD

Figure 6-3

6. (clear) will activate.

7. Insert the Anode voltage measuring device (Universal Poly ranger Model USP or equivalent) into test points TP101 and TP102.

8. Depress the "HV ON" switch, the "READY" indicator light (red) will activate and the"STANDBY" indicator light (clear) will deactivate.

9. Monitor the Anode voltage as indicated on the Anode voltage measuring device, the voltages should read as follows:

PLUG IN MODEL	VOLTAGE
10359	100 VDC
10363	100 VDC
10364	100 VDC
10365	75 VDC

10. Depress the "STANDBY" switch, the "READY" indicator light (red) will deactivate and the "STANDBY" indicator light (clear) will activate.

11. Turn the "AC ON" switch of the Model 10358 R.F. Amplifier to the "OFF" position.

6.16 Anode over current adjustment.

The maximum Anode current capability of the 200 watt amplifier is 250 ma . With a 50 ohm load connected to the output line, drive the unit with an RF signal. Detune the output tuning control off resonance. Apply signal until Anode current is 250 ma . Adjust R102 until unit returns to fault. Remove drive immediately.

6.17 Screen over current adjustment.

Under normal operating conditions, screen current is not drawn from the RF amplifier tube. Only under extreme conditions, improper output termination, under coupled conditions (applicable with plug-in heads 10359 and 10363), application of RF drive without anode and screen potentials, or a failure in the screen by-pass capacity, will allow enough current flow to energize K103. R110 has been factory set and should not require further adjustment.

6.18 VSWR protection circuit.

The circuit MCL 41B1025A provides R115 and R116 for sensing level adjustments. R116 is used for control of the differential amplifier. This potentiometer is factory set and should not require further adjustment. R115 can vary the VSWR protection level. It is set to have K108 energized by Q101A and Q101B when reflected output power is in excess of 25 watts.

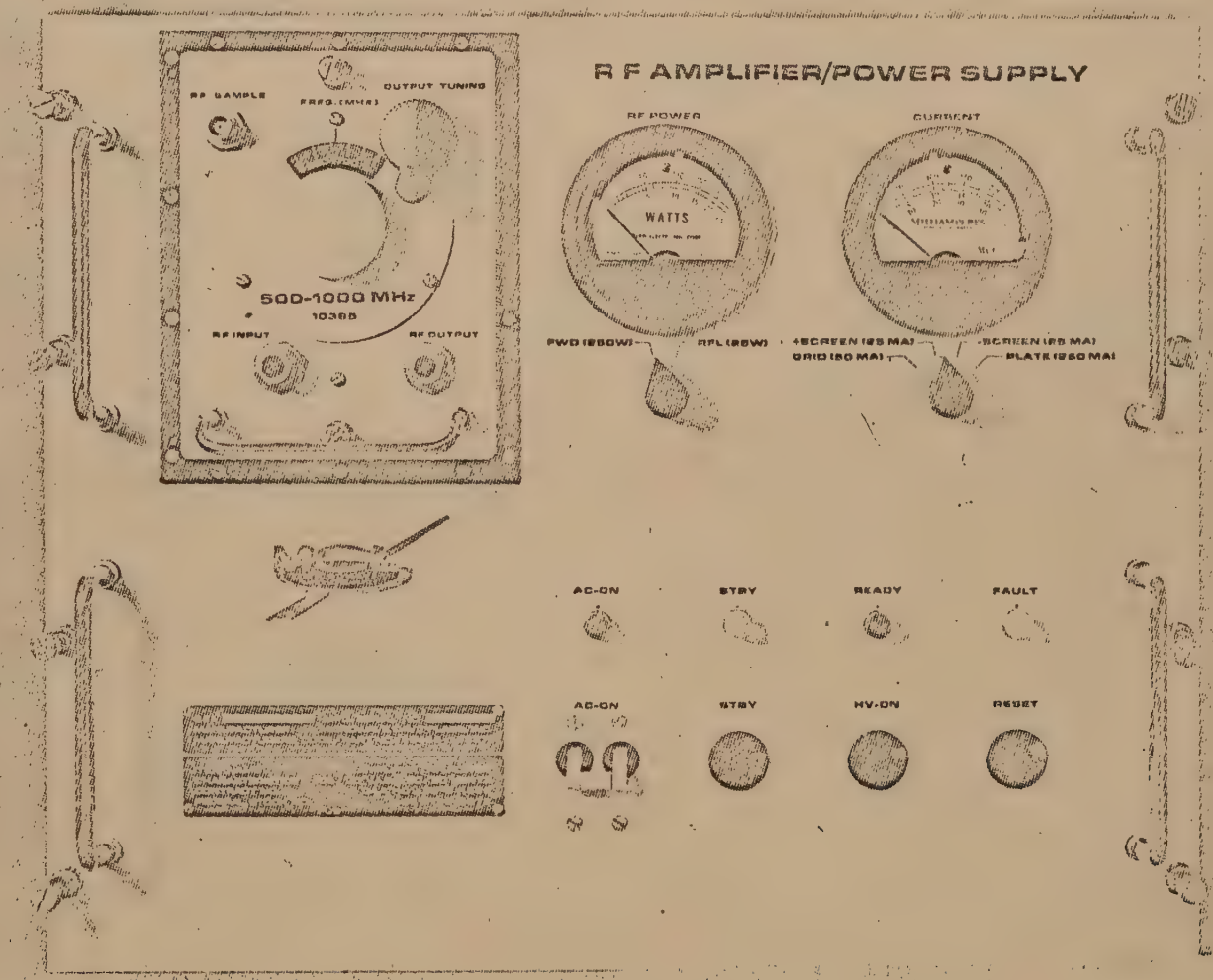
7.0 Trouble Shooting.

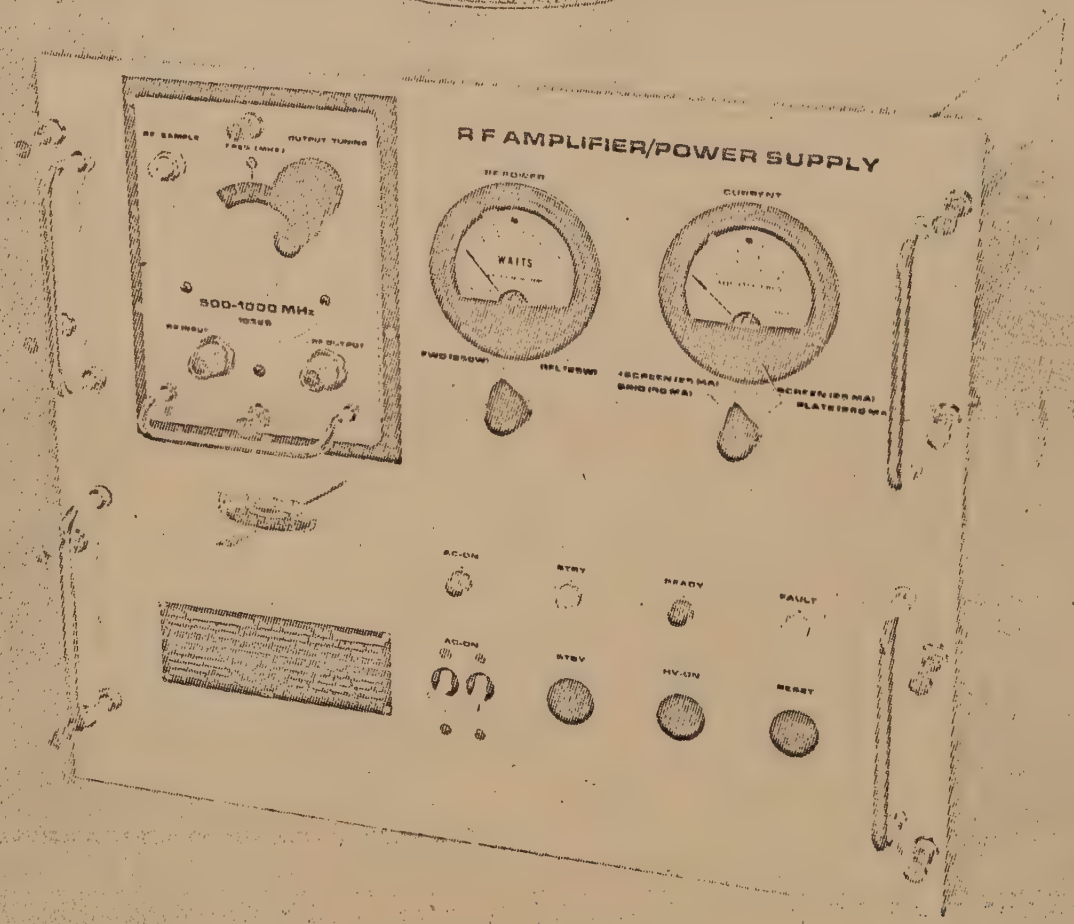
7.1 Table 7-1 System Trouble Shooting has been prepared as an interim guide to and in the isolation of possible problem areas that may arise.

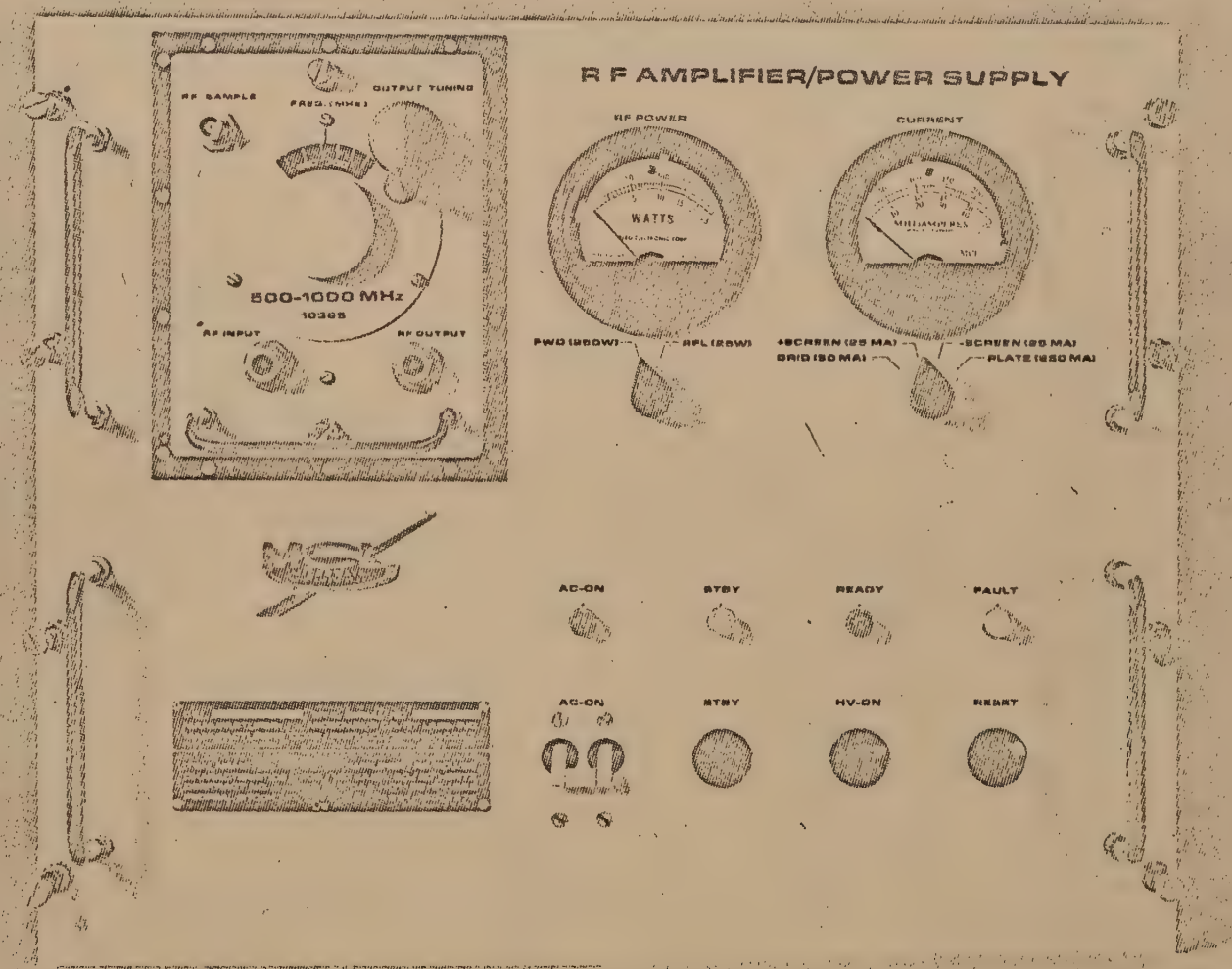
TABLE 7-1 SYSTEM TROUBLE SHOOTING

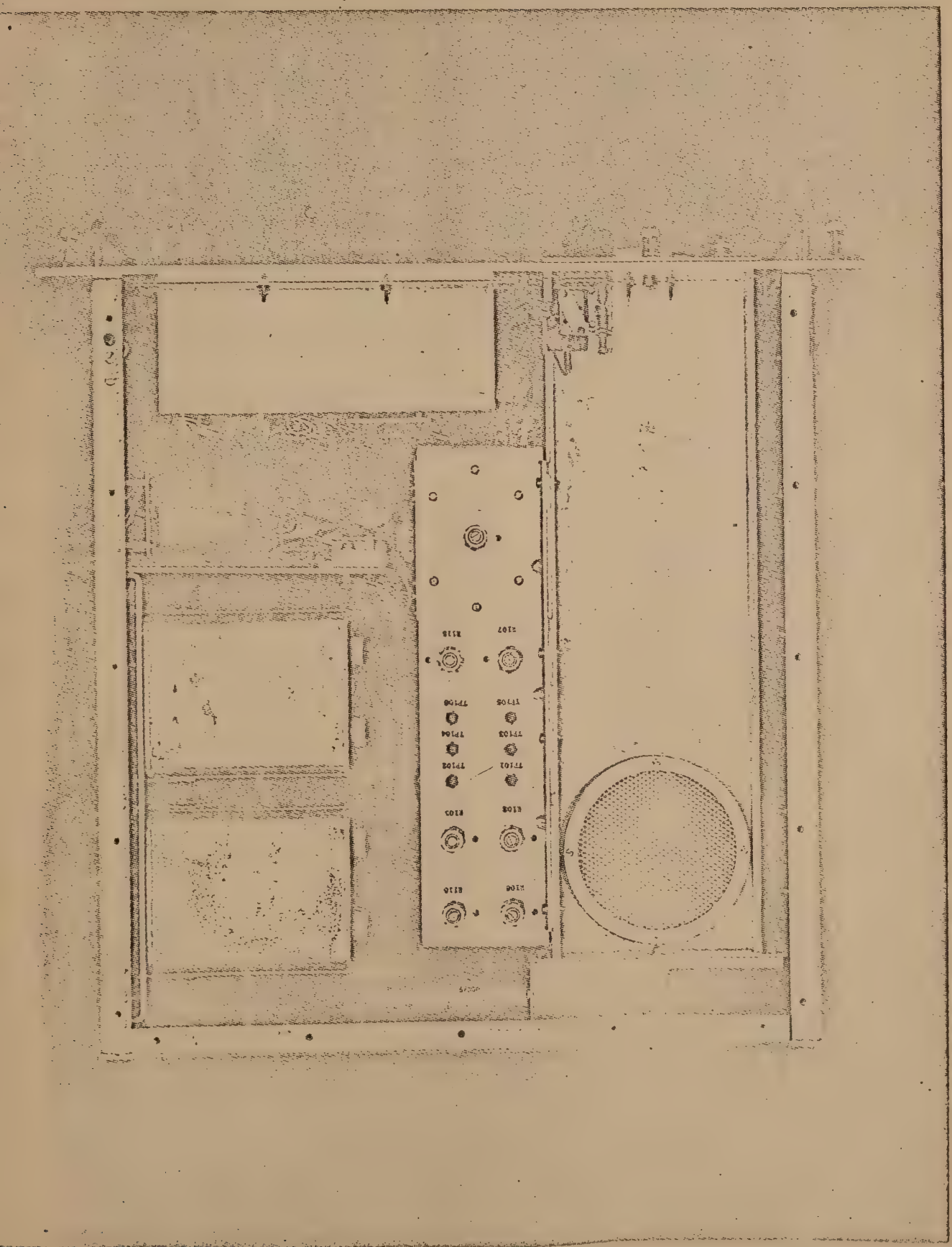
STEP	SYMPTOM	PROBABLE CAUSE	REMEDY
1	No "AC ON" light when CB101 is turned on	No AC Power Input	Check AC Source Check Power Cord and connection to equipment
		"AC ON" indicator lamp is defective	Replace defective lamp
		Circuit breaker CB101 is defective	Replace CB101
		Line Filters FL101 & 102 are defective	Replace FL101 & 102
2	No "STBY"light approx. 2 min. after "AC ON" is turned on	Air flow switch S108 is not operating	Check Air blower B101 for blocked air passage
		HV Int. lock switch S106 not operating	Check tightness of top cover or if S106 is defective, replac
		Plug-in int. lock switch S107 not operating	Check pressure of lock screws on face plate of plug-in module to front pane of PS drawer or if S107 is defective, replace
		Time delay relay K101 not operating	Check for proper sea ing on socket or if found defective, replace
		"STBY" indicator lamp is defective	Replace
3	No "Ready" light as "HVON" switch S102 is activated and does not switch to "FAULT" condition	Switching relays K102 & K106 are not operating	Check if K102 &K106 are securely seated on sockets and also check for chattering action, if found defective, replace.

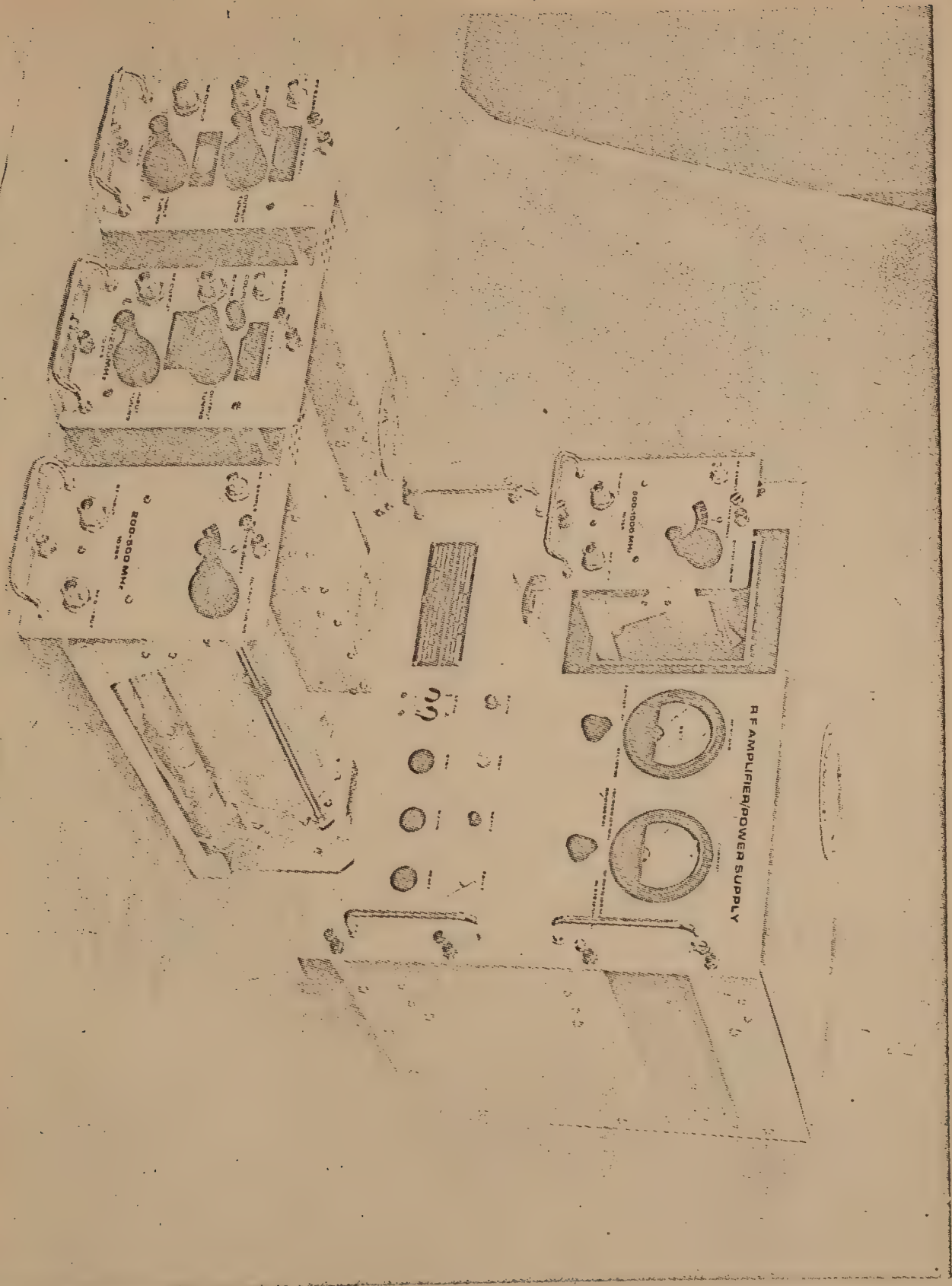
		Anode Power supply PS101 is not operating properly	Check test points TP101 & TP102 100VDC, for either one of these plug in modules, 10359, 10363 & 10364 in in P.S. Drawer; 75 VDC for plug-in Module 10365 in P.S Drawer
		Failure of relay K105	Check for proper seating on socket and chattering action or if foun defective, replace
		Defective "READY" lamp	Replace
4	No "READY" light as "HV ON" switch S102 is activated and switching instantaneously to "FAULT" condition	Over current at the Anode Power supply PS101	Check output of PS101 for low resistance to ground or short
			Check Pin 1A of P103 of plug-in module for short to ground
		Over current at screen Power supply PS102 (For all except 10365 plug-in module)	Check output of PS 102 for low resistance to gnd or short
		Fault operation of VSWR sensor	Check RF drive an Reflected Power output of plug-in Modules

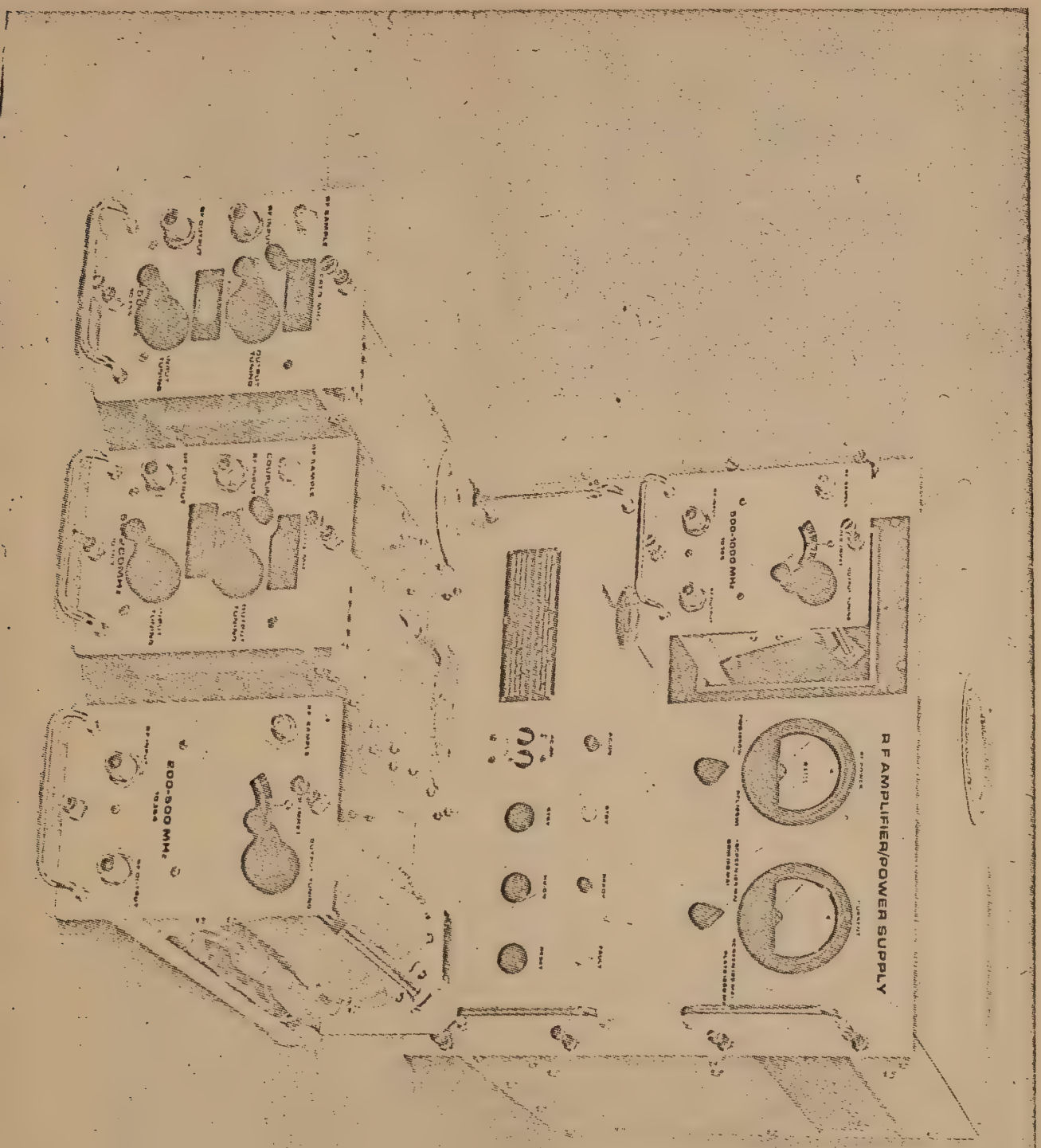

RF AMPLIFIER/POWER SUPPLY
RF SAMPLE
OUTPUT TUNING
500-1000 MHz
10388
RF INPUT
RF OUTPUT
RF POWER
WATTS
CURRENT
FWD (250W)
RFL (25W)
+SCREEN (125 MA)
-SCREEN (125 MA)
GRID (50 MA)
PLATE (250 MA)
AC-ON
STBY
READY
FAULT
AC-ON
STBY
HV-ON
RESET

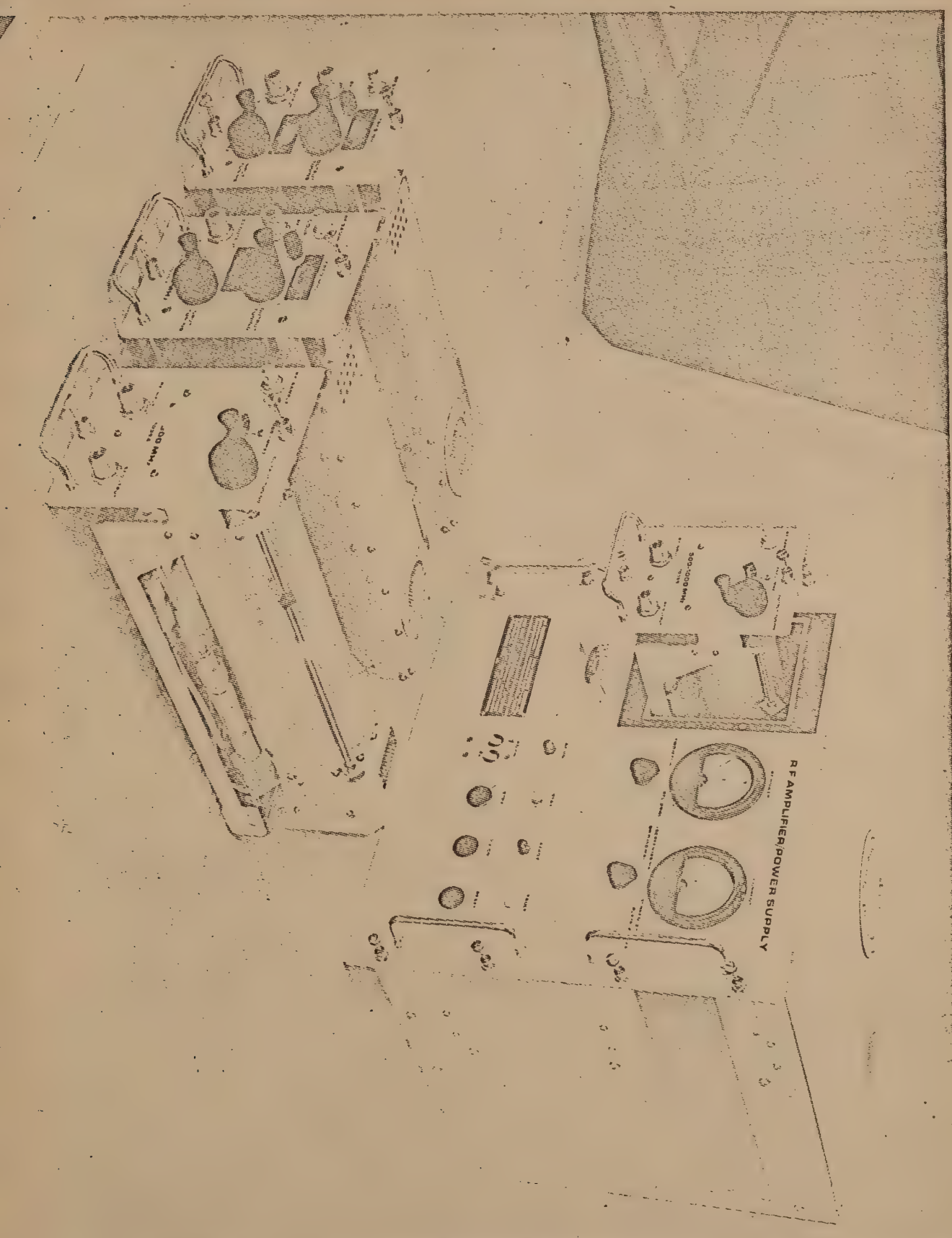

RF AMPLIFIER/POWER SUPPLY
WATTS
500-1000 MHz
AC-ON
STBY
READY
FAULT
AC-ON
STBY
HV-ON
RESET

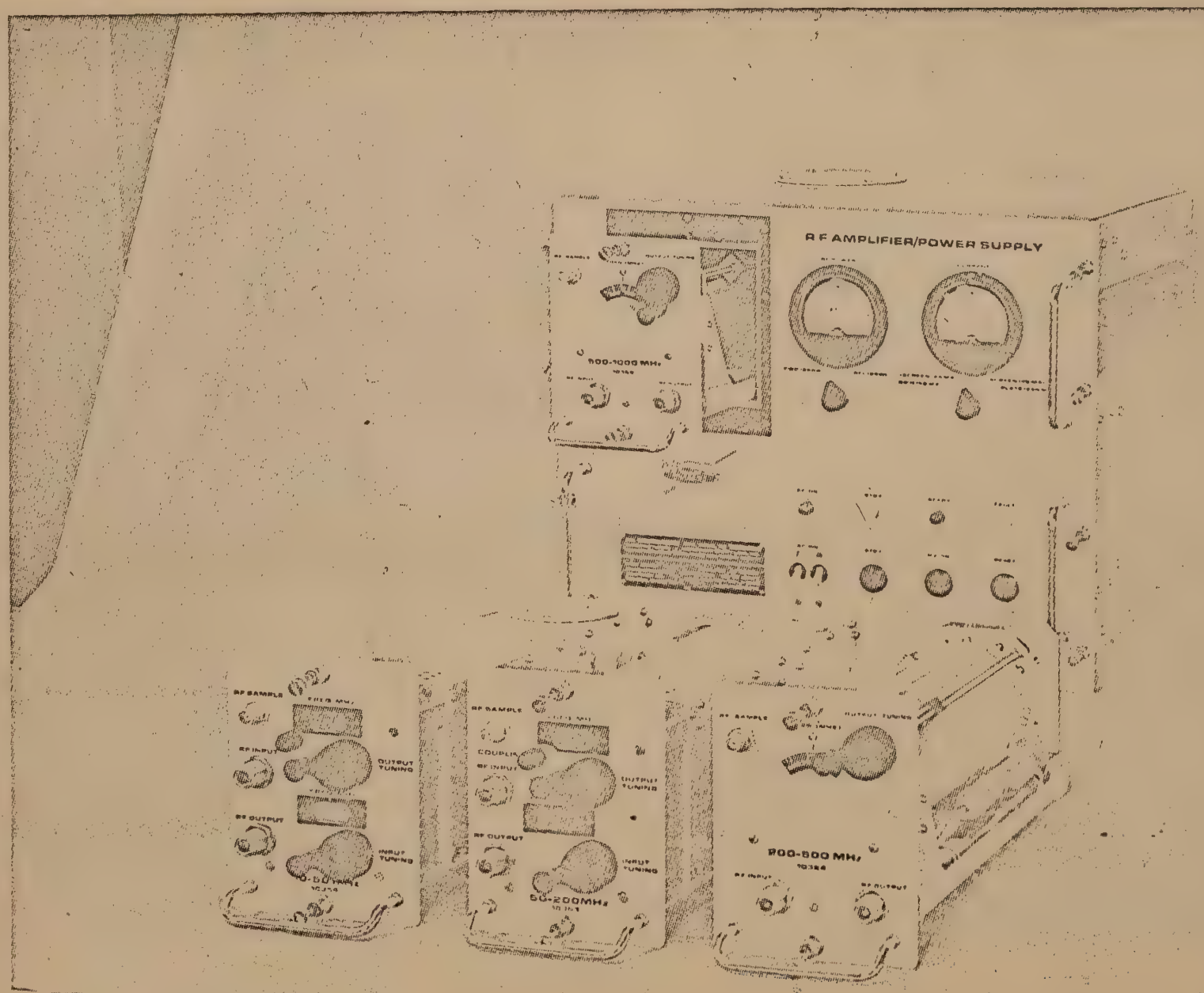

RF AMPLIFIER/POWER SUPPLY
RF SAMPLE
OUTPUT TUNING
FREQ. (MHz)
500-1000 MHz
10365
RF INPUT
RF OUTPUT
RF POWER
WATTS
CURRENT
MILLIAMPERES
FWD (250W)
RFL (25W)
+SCREEN (25 MA)
-SCREEN (25 MA)
GRID (50 MA)
PLATE (250 MA)
AC-ON
STBY
READY
FAULT
AC-ON
STBY
HV-ON
RESET

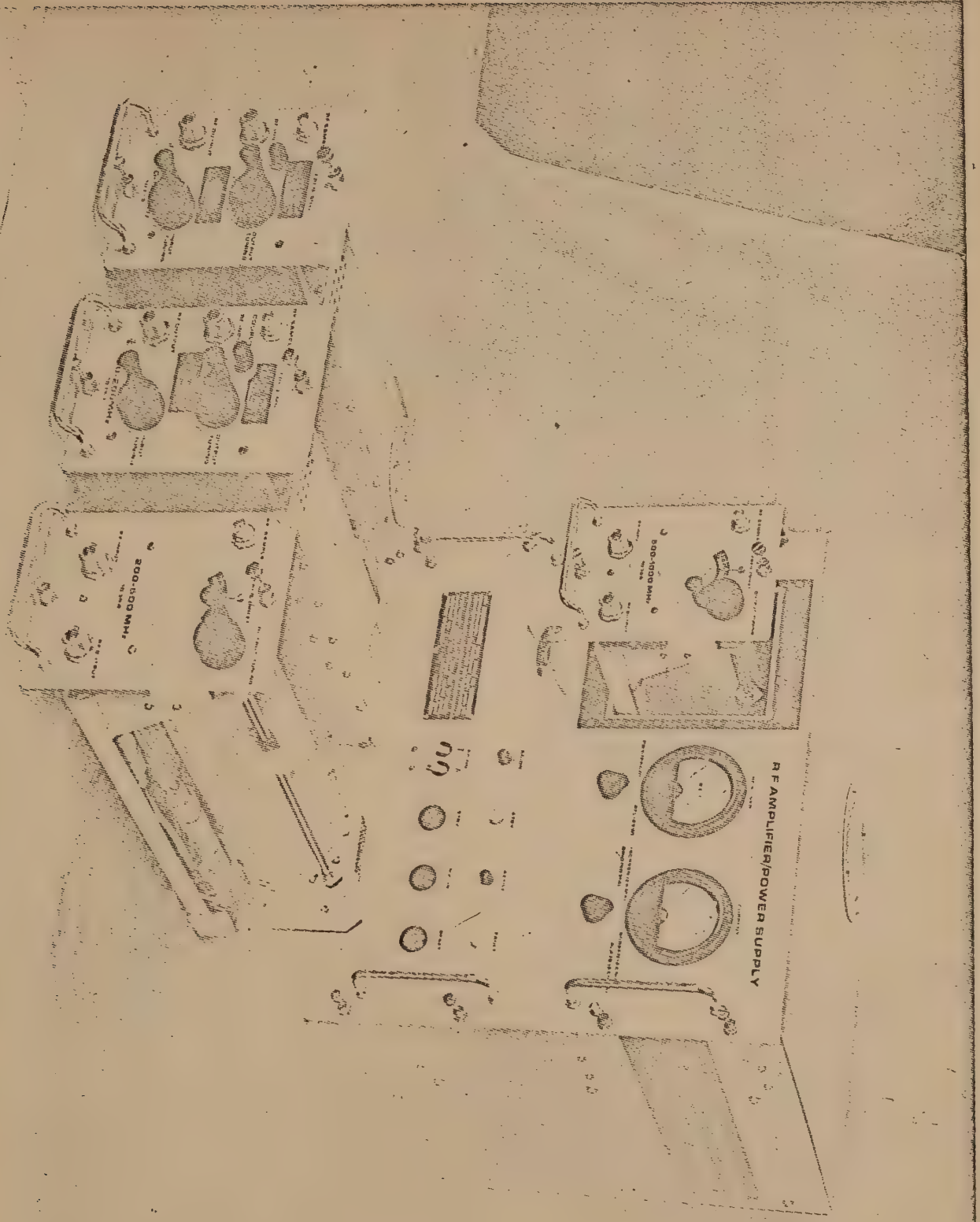

R107
R108
TP105
TP104
TP103
TP102
TP101
R103
R104
R105
R106

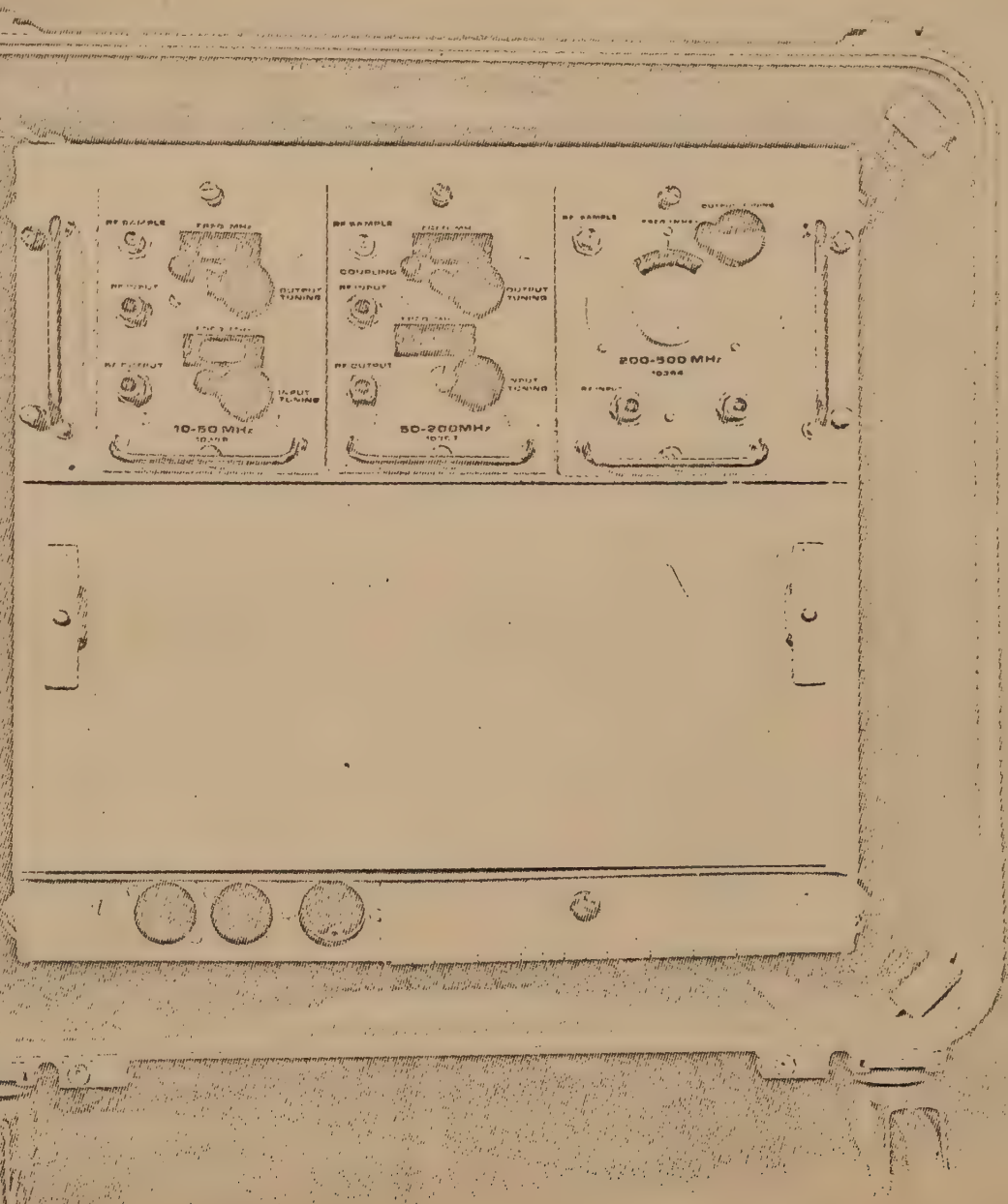

800-900 MHz
800-1000 MHz
RF AMPLIFIER/POWER SUPPLY

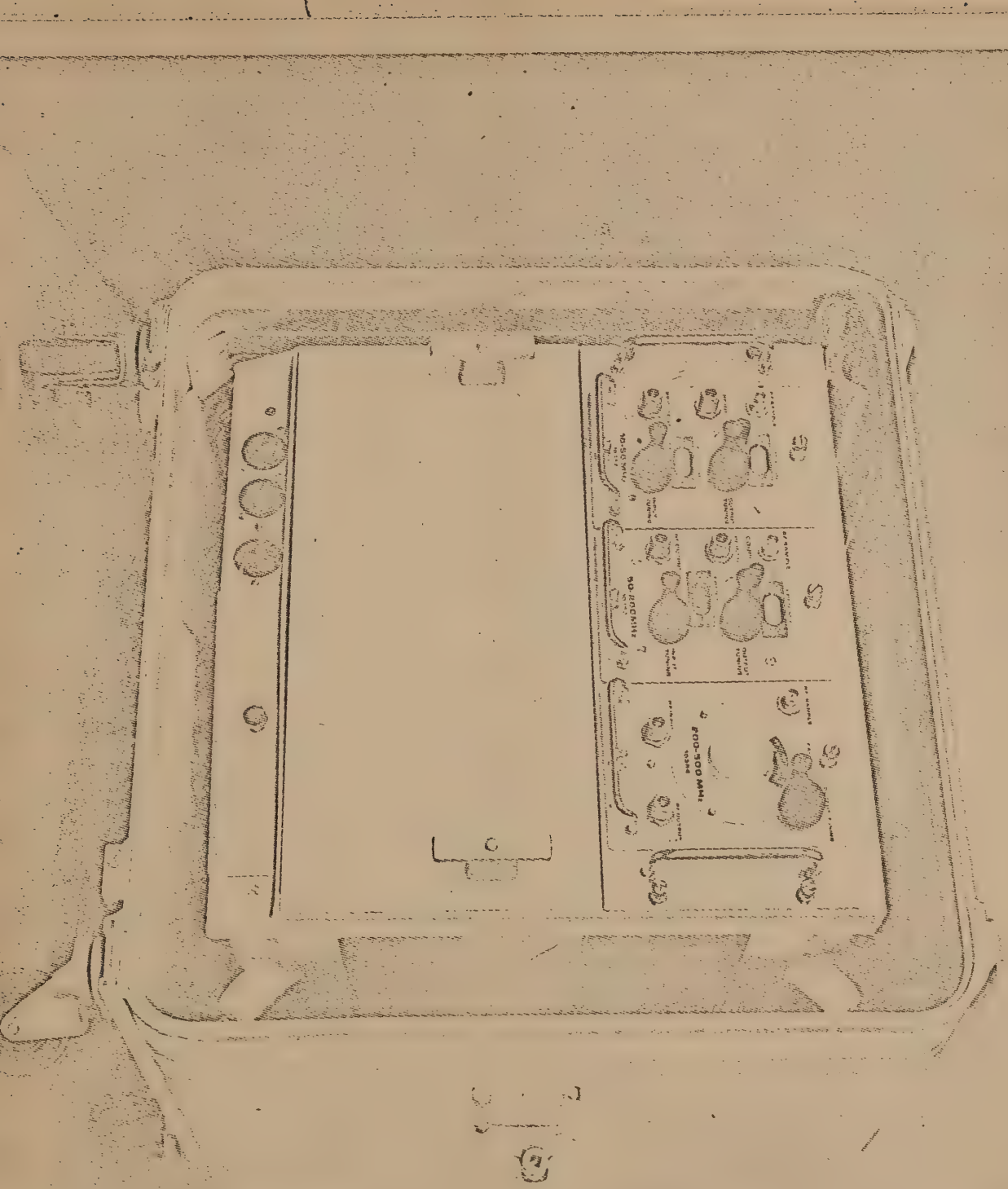

RF AMPLIFIER/POWER SUPPLY
800-1000 MHz
600-800 MHz


RF AMPLIFIER/POWER SUPPLY


RF AMPLIFIER/POWER SUPPLY
800-1000 MHz
RF SAMPLE
RF INPUT
OUTPUT TUNING
RF OUTPUT
INPUT TUNING
50-200MHz
COUPLER
800-500 MHz


800-1000 MHz
RF AMPLIFIER/POWER SUPPLY


10-50 MHz
50-200MHz
200-500 MHz



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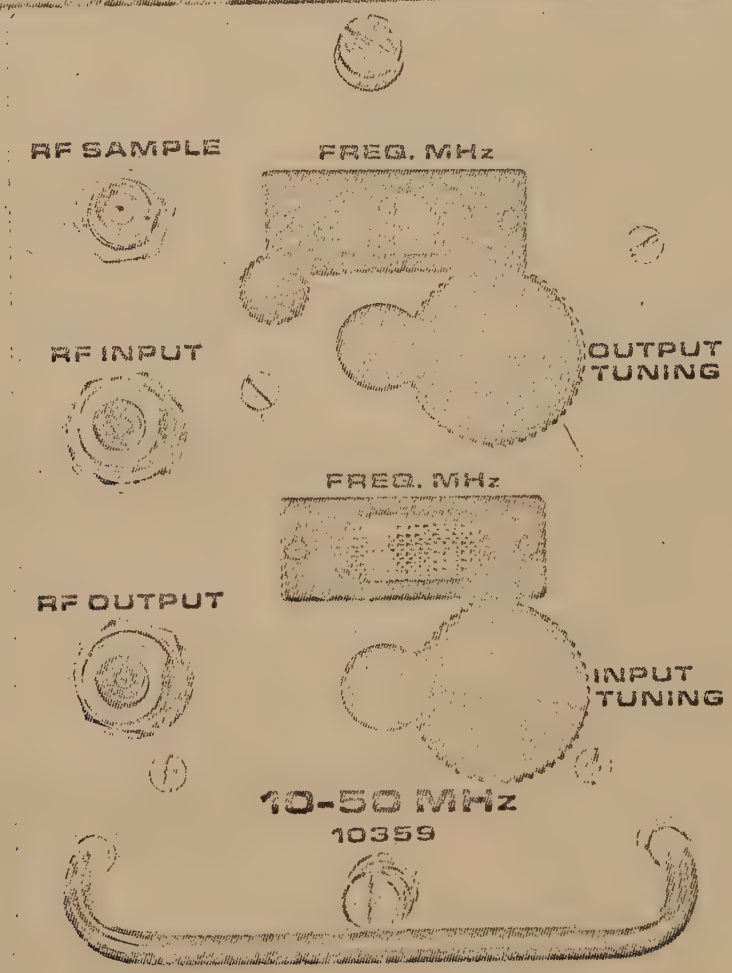
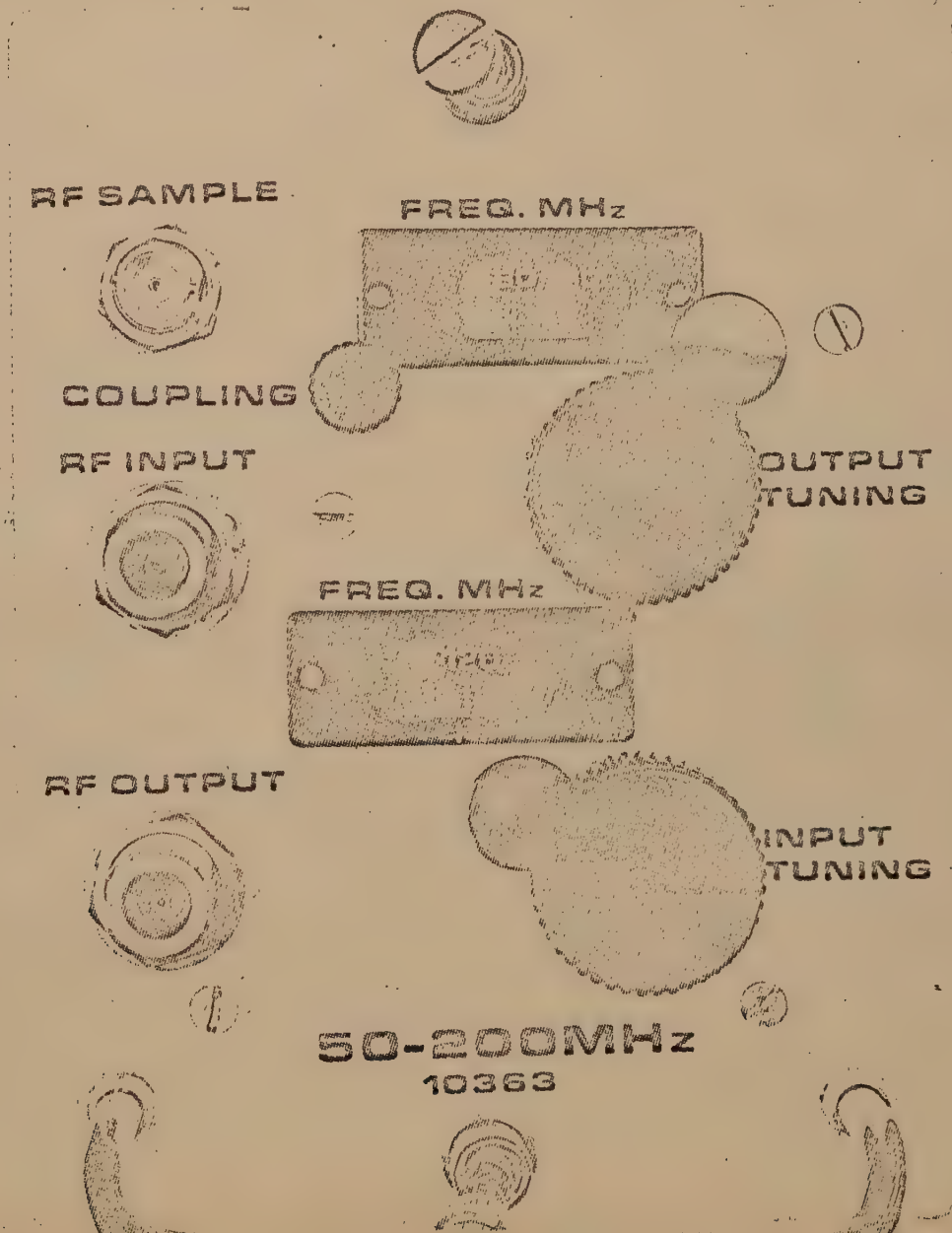
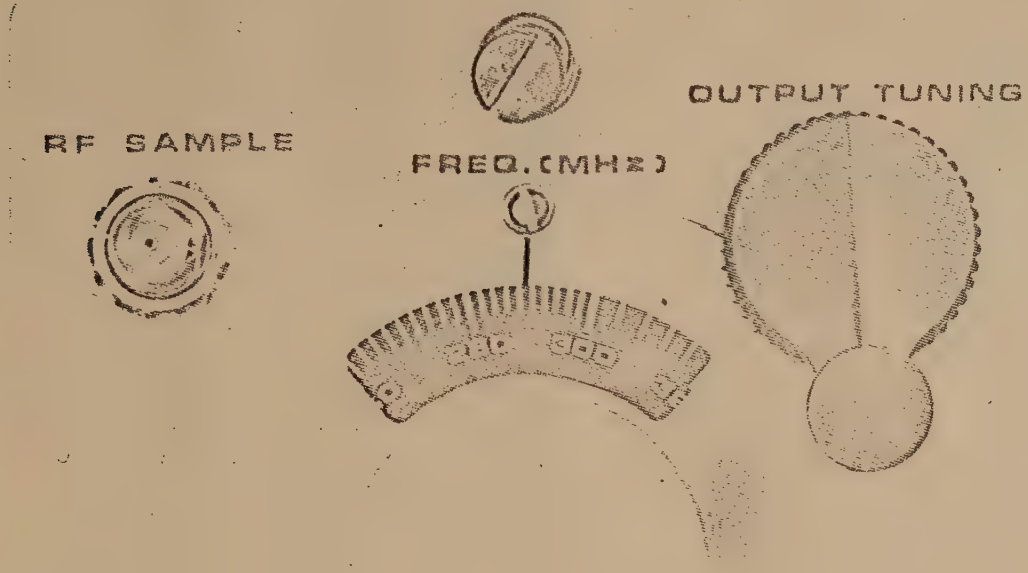

RF SAMPLE
FREQ. MHz
RF INPUT
OUTPUT TUNING
FREQ. MHz
RF OUTPUT
INPUT TUNING
10-50 MHz
10359


RF SAMPLE
FREQ. MHz
COUPLING
RF INPUT
OUTPUT TUNING
FREQ. MHz
RF OUTPUT
INPUT TUNING
50-200MHz
10363

10363

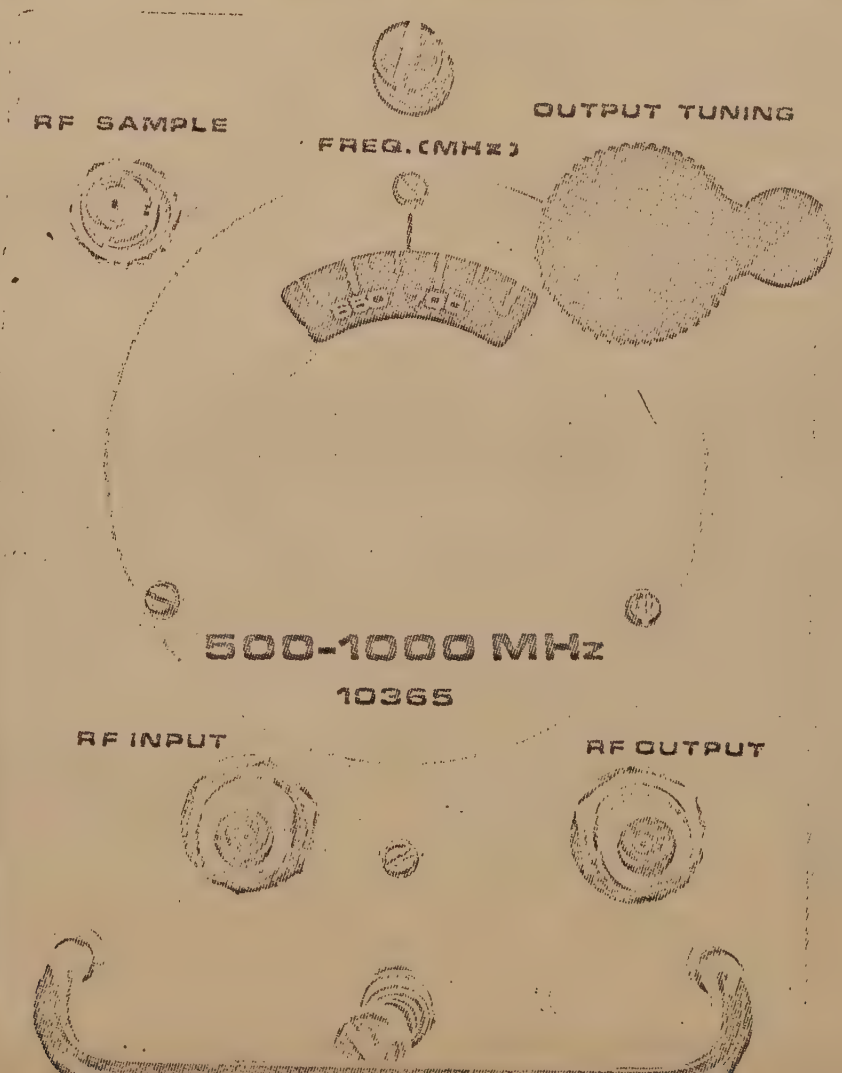
OUTPUT
RF OUTPUT
50-200Ω
RF INPUT
COUPLING
RF SAMPLE
FEED THRU

10364

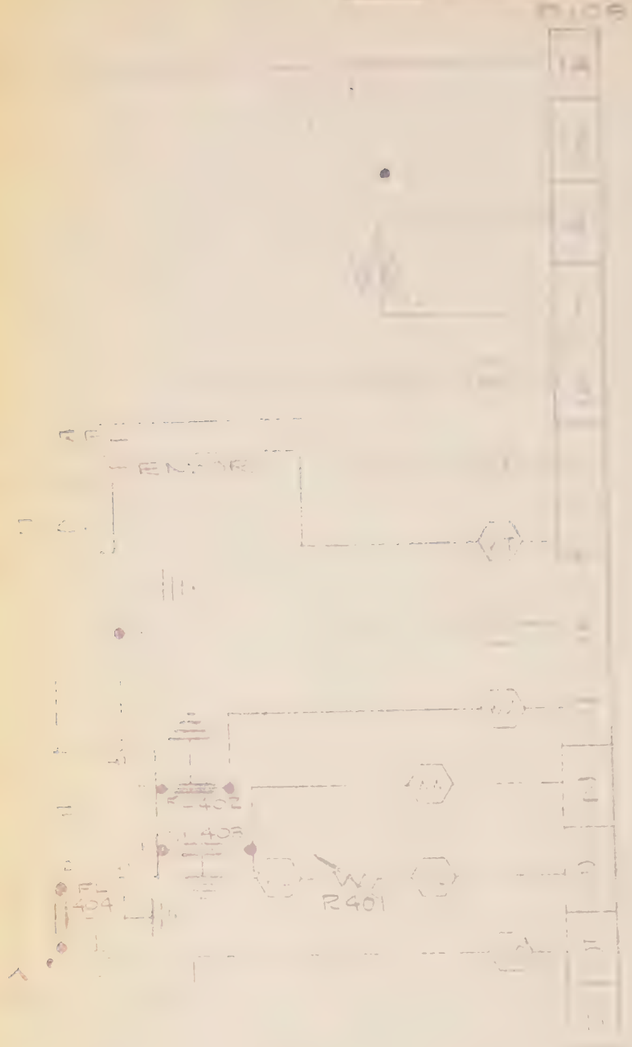


200-500 MHz

10364


RF SAMPLE
FREQ.(MHz)
OUTPUT TUNING
500-1000 MHz
10365
RF INPUT
RF OUTPUT

SYM.	DESCRIPTION	DATE	APPROVAL
A	ORIGINAL		



REFERENCE
ISSUED
APR 29 1970
PRINT

ITEM	PART NO.	QTY.	DESCRIPTION	MAT'L.	MAT'L. SPEC.

LIST OF MATERIAL

DO NOT SCALE:

DIMENSIONS ARE IN INCHES
TOLERANCES FRACTIONAL ± 1/64
DECIMAL ± .005
ANGULAR ± 1°

MATERIAL

SPEC

FINISH

SPEC

	DRAWN		
	CHECKER		
	ENGR. APPR.		
	MFG. ENGR.		
	PROJ. ENGR.		
	CHIEF ENGR.		

SCHEMATIC FOR
[illegible]-1363
50-200MHZ

MCL MICROWAVE
MICROWAVE CAVITY LABORATORIES
LaGRANGE, ILLINOIS

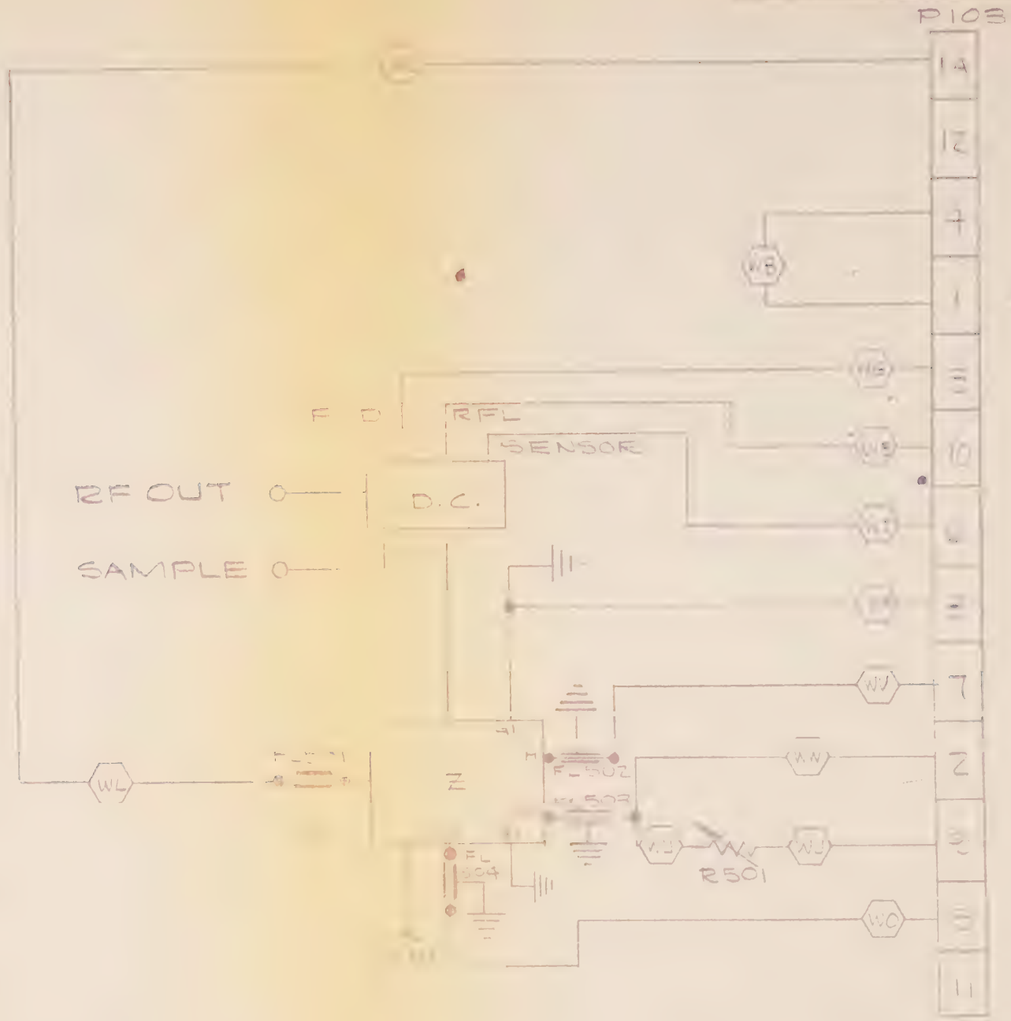
32B1258

NEXT ASS'Y	USED ON	NEXT ASSY	FINAL ASSY
APPLICATION		QTY. REQ'D.	

SCALE: WEIGHT: ACT: CALC'D

SHEET OF

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVAL
—	ORIGINAL	1970	[illegible]



REFERENCE
ISSUED
APR 29 1970
PRINT

ITEM	PART NO.	QTY.	DESCRIPTION	MAT'L.	MAT'L. SPEC.
			LIST OF MATERIAL		

DO NOT SCALE:

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES FRACTIONAL ± 1/64
DECIMAL ± .005
ANGULAR ± 1°

MATERIAL:
SPEC:
FINISH:
SPEC:

DRAWN	F. [illegible]	[illegible]
CHECKER		
MECH. ENGR.		
ELEC. ENGR.		
RADIA. ENGR.		
CHIEF ENGR.		

SCHEMATIC FOR PLUG IN HEAD
10364
200-800 MHz

SCALE: WEIGHT ACT. CALC.

MCL MICROWAVE CAVITY LABORATORIES
LAGRANGE, ILLINOIS

32 5159

SHEET OF

NEXT ASS'Y	USED ON	NEXT ASSY	FINAL ASSY
APPLICATION		QTY. REQ'D.	

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVAL

REFERENCE
ISSUED
APR 29 1970
PRINT

ITEM	PART NO.	QTY.	DESCRIPTION	MAT'L	MAT'L SPEC.

LIST OF MATERIAL

NEXT ASS'Y	USED ON	NEXT ASSY	FINAL ASSY
APPLICATION		QTY. REQ'D.	

DO NOT SCALE:

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES FRACTIONAL 1/64
DECIMAL .01
ANGULAR 1°

MATERIAL:

SPEC.

FINISH:

SPEC.

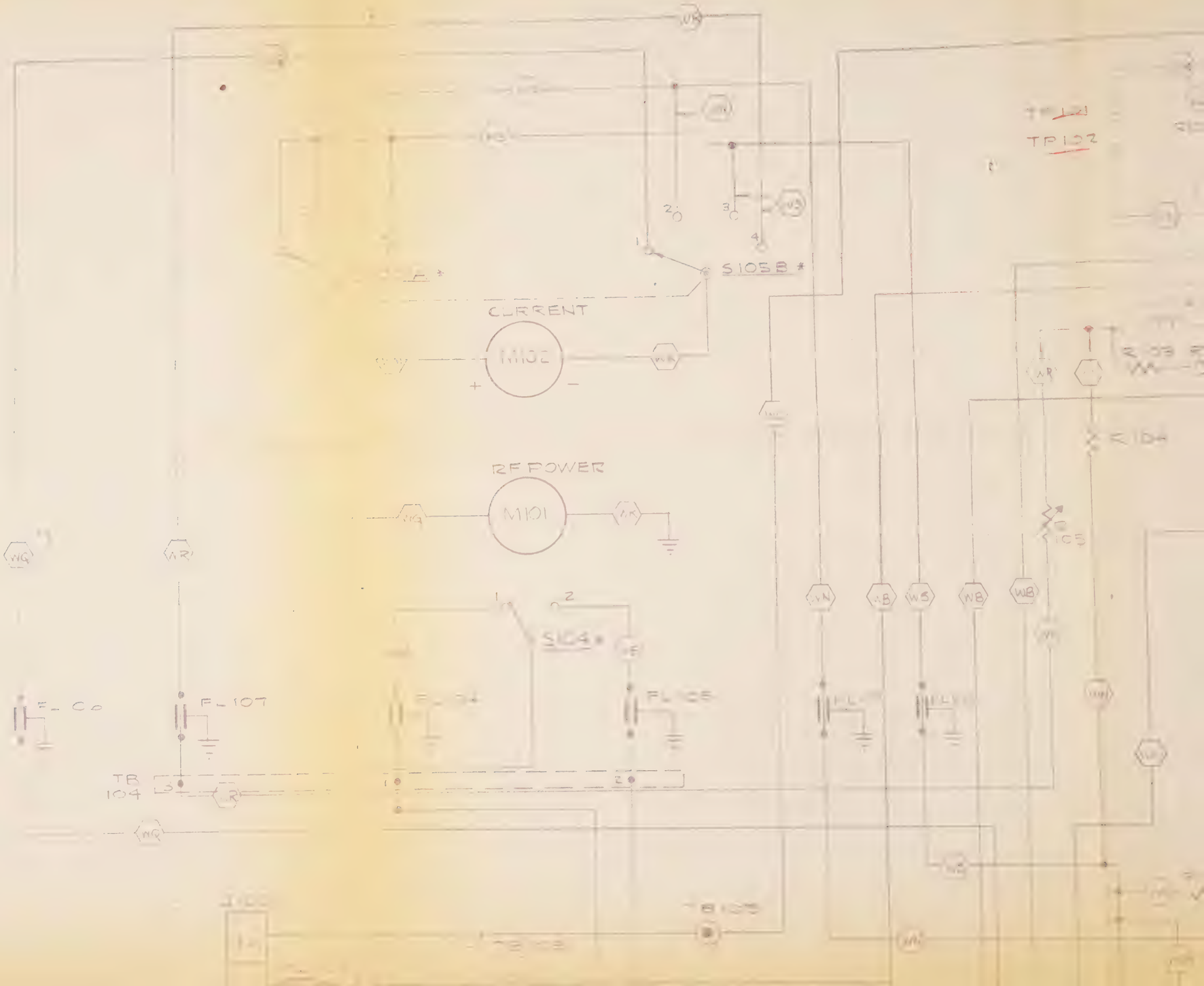
DRAWN		
CHECKED		
MECH. ENGR.		
ELEC. ENGR.		
PROJ. ENGR.		
CHIEF ENGR.		

DESIGNATION
FLUSH HEAD
1C365
500-1000 MHz

SIZE | WEIGHT: NET: CALC.: | SHEET OF

MCL MICROWAVE
MICROWAVE CAVITY LABORATORIES
LaGRANGE, ILLINOIS

SZB1260

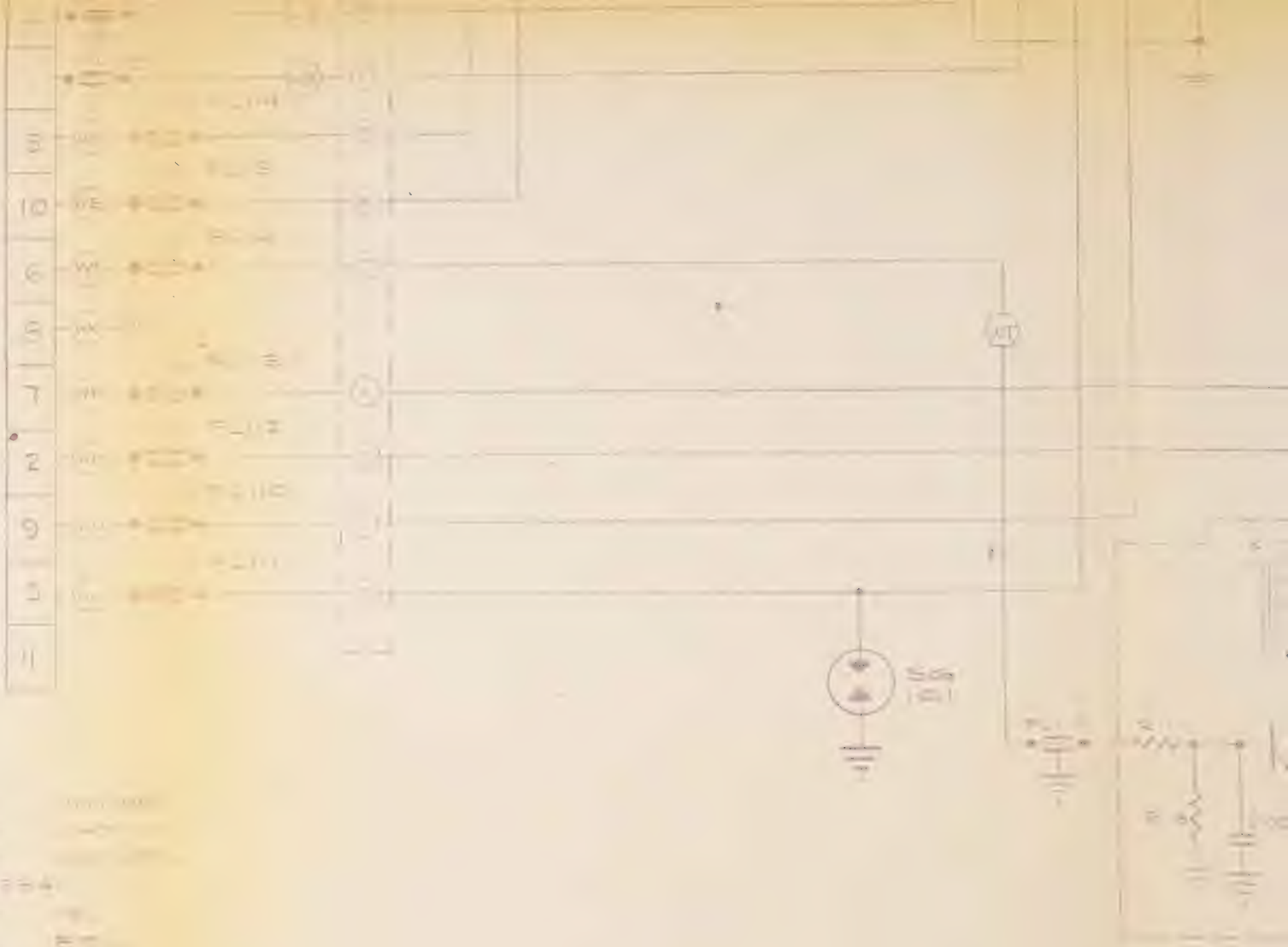

CURRENT
M102
RF POWER
M101
S105B *
S104 *
TP 101
TP 102
F-106
F-107
TB 104
R 104
R 105

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVAL

PS 103
FILAMENT SUPPLY

FOR SEPARATE
SCHEMATIC OF RF MD.
SEE TAB-LE BELOW

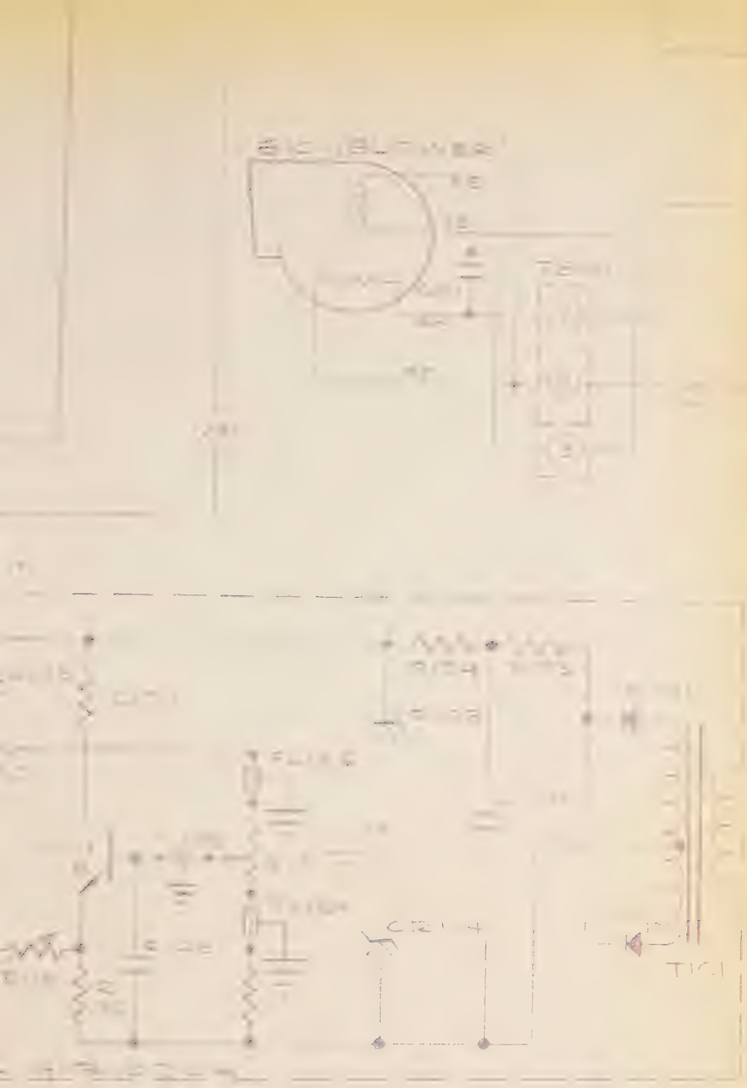
REF ID NO	FREQ	SCHEMATIC
10950	[illegible]	[illegible]
10908	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
10934	[illegible]	[illegible]



WIRE CODE:

CODE	GA.	COLOR
WA	14	GRAY
WB	18	GRAY
WC	20	GRAY
WD	22	GRAY
WE	22	WHT/GRN.
WF	22	WHT/RED
WG	22	WHT/YEL.
WH	22	WHT/BLU.
WI	22	WHT/VIO
WJ	22	WHT/GRY
WK	20	BLK.
WL	5KV	RED
WM	20	RED
WN	20	VIO.
WO	20	ORN.
WP	14	BRN.

CONT		
WQ	16	[illegible]
WR	20	[illegible]
WS	20	[illegible]
WT	[illegible]	
WU	[illegible]	
WV	[illegible]	[illegible]
WW	16	YEL



* S104 POSITION-1 FOR ZERO
POSITION REFLECTOR

REFERENCE
ISSUED
APR 29 1970
PRINT

ITEM	PART NO.	QTY.	DESCRIPTION	MAT'L.	MAT'L. SPEC.

LIST OF MATERIAL

SCHEMATIC
CF 5 FD. DRAWER
03558

MCL MICROWAVE
MICROWAVE CAVITY
LABORATORIES
LaGRANGE, ILLINOIS

03558

SCALE | WEIGHT ACT. CALC. | SHEET OF

DO NOT SCALE:

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES FRACTIONAL ±
DECIMAL ±
ANGULAR ±

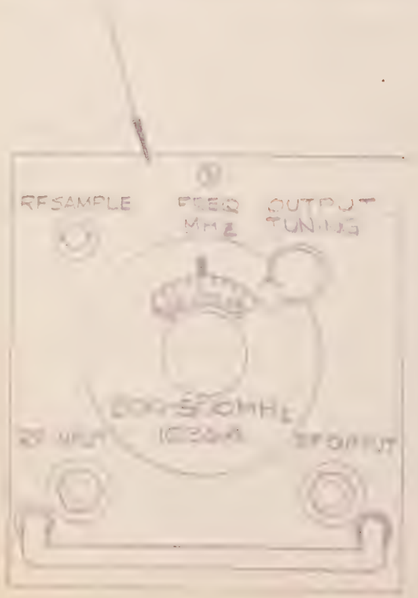
MATERIAL:
SPEC.

FINISH:
SPEC.

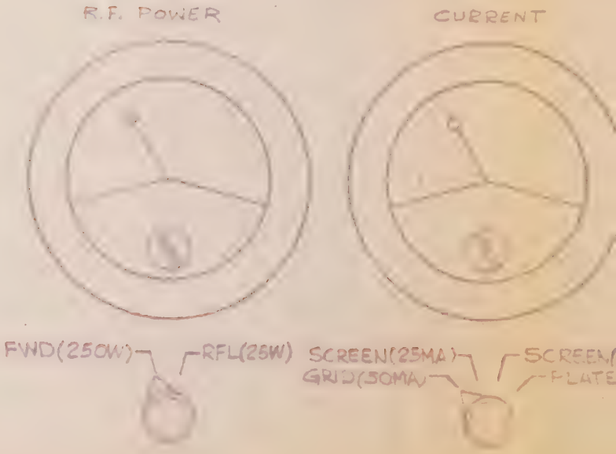
DRAWN
CHECKED
MECH. ENGR.
ELEC. ENGR.
PROJ. ENGR.
CHIEF ENGR.

NEXT ASS'Y	USED ON	NEXT ASSY	FINAL ASSY
APPLICATION		QTY. REQ'D.	

PLUG-IN AMPLIFIER
MODULE E10359 (10-50 MHz)
MODULE E10363 (50-200 MHz)
MODULE E10364 (200-500 MHz)
MODULE E10365 (500-1000 MHz)



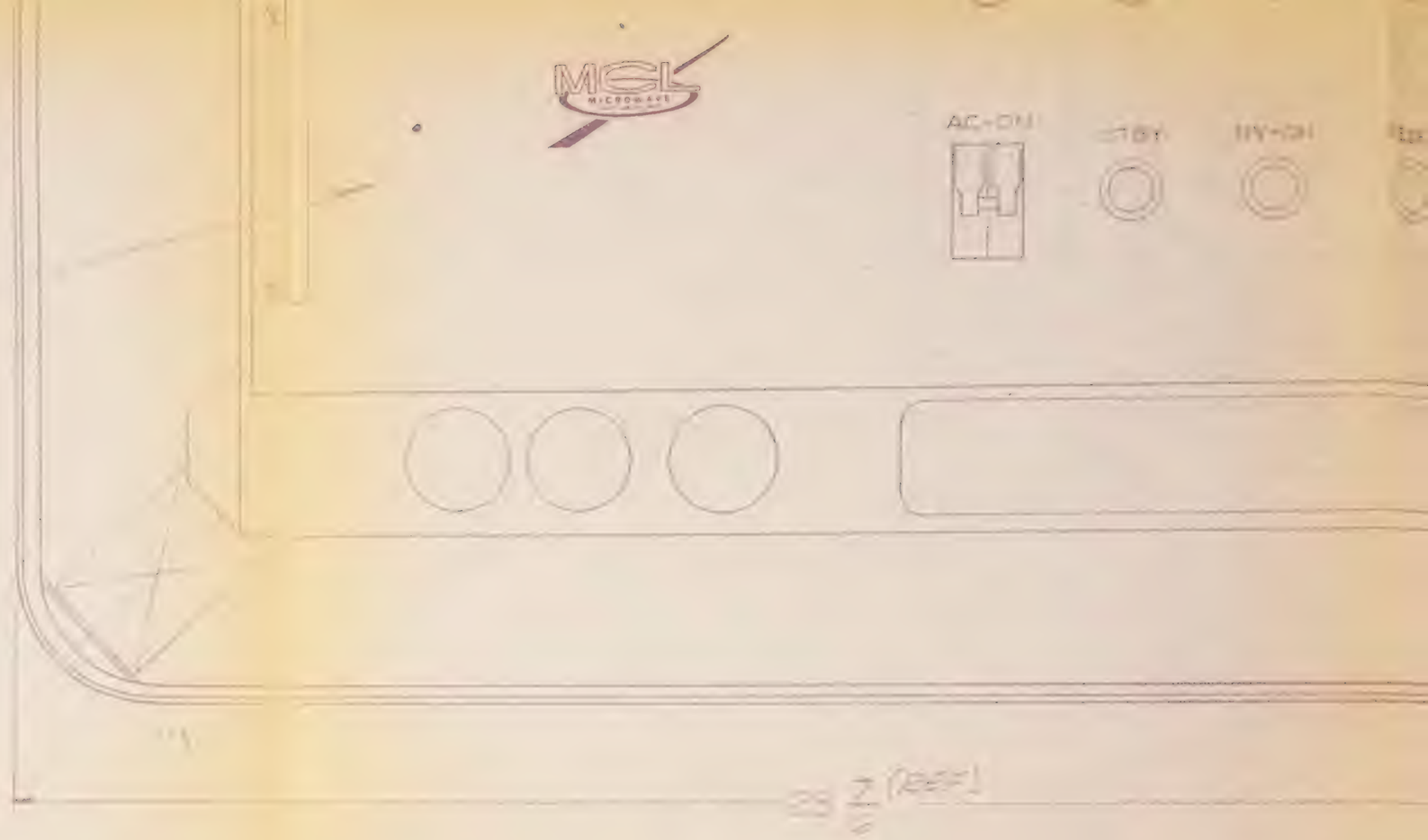
RF AMPLIFIER/POWER SUPPLY



REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVAL
A	[illegible]	[illegible]	

TAINER 7921059-17

RECTIFIER / POWER SUPPLY
WITH SLIDES
E10358



REFERENCE
ISSUED
APR 30 1970
PRINT

ITEM	PART NO.	QTY.	DESCRIPTION	MAT'L.	MAT'L. SPEC.
			LIST OF MATERIAL		

DO NOT SCALE:

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES FRACTIONAL ±
DECIMAL ±
ANGULAR ±

MATERIAL:

SPEC:

FINISH:

SPEC:

DRAWN	AB	5/1
CHECKER		
MECH. ENGR.		
ELEC. ENGR.		
PROJ. ENGR.		5/7/70
CHIEF ENGR.		

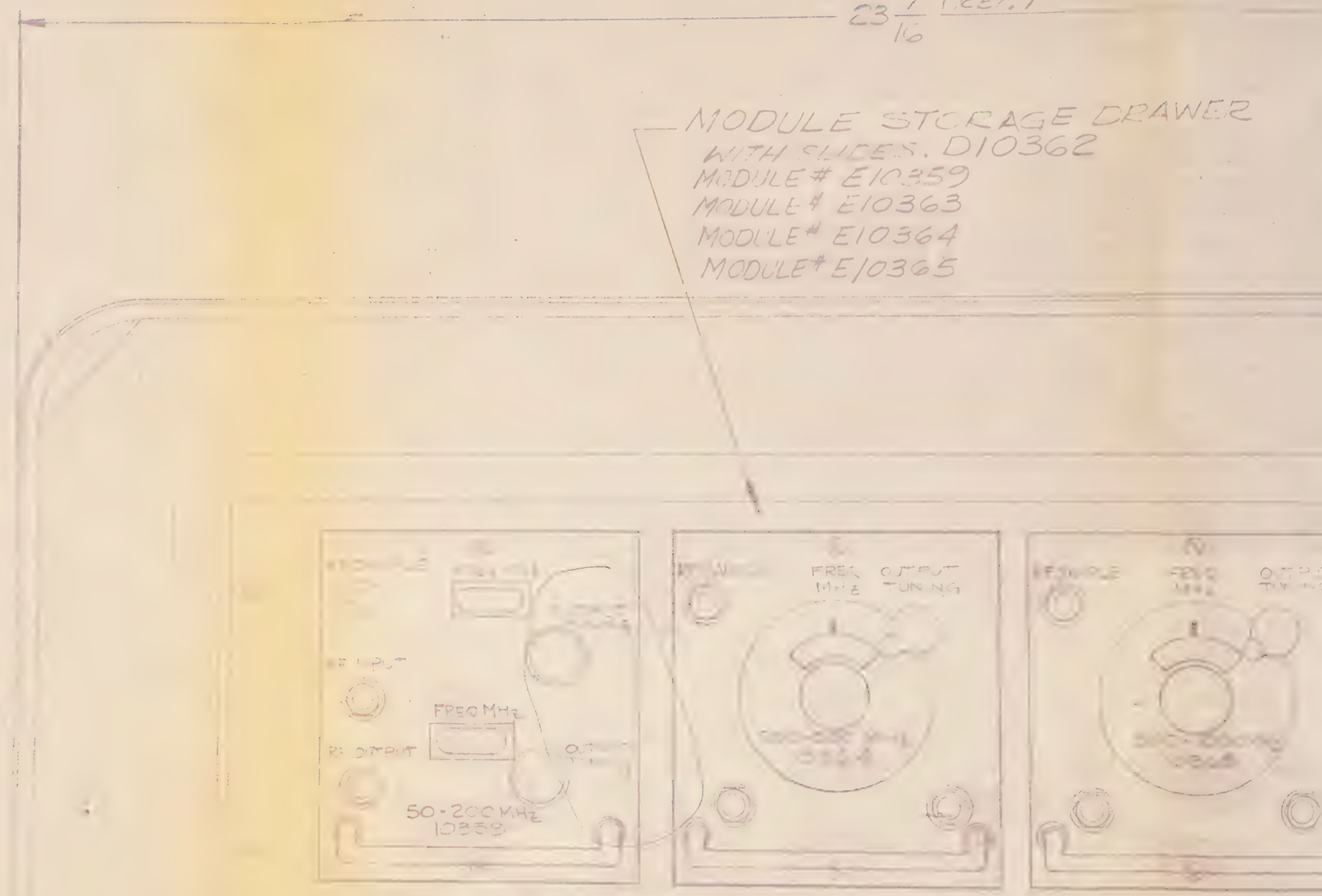
R.F. AMPLIFIER-
POWER SUPPLY ASSY.
LAYOUT & OUTLINE

MCL MICROWAVE CAVITY LABORATORIES
LAGRANGE, ILLINOIS

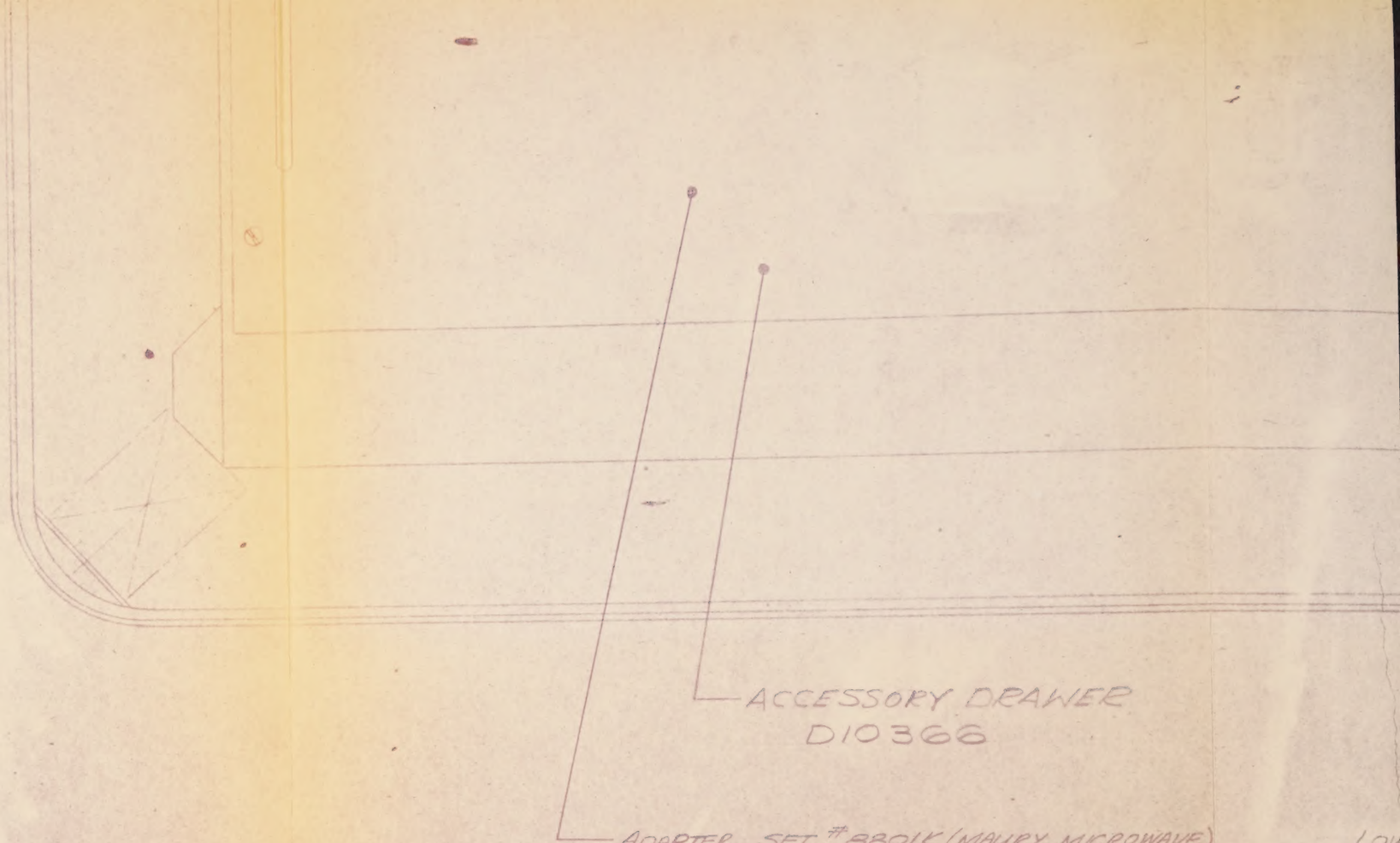
D10357

SCALE WEIGHT ACT. CALC. SHEET OF

NEXT ASS'Y	USED ON	NEXT ASSY	FINAL ASSY
APPLICATION		QTY. REQ'D.	

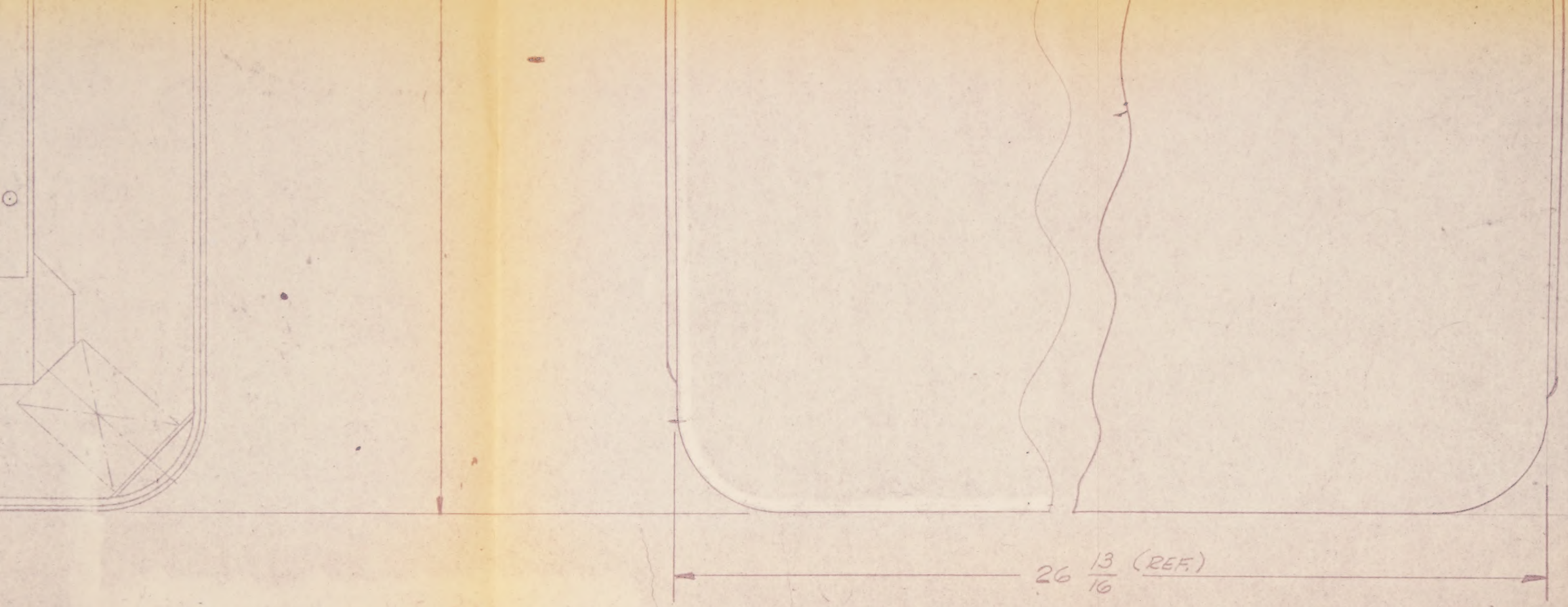

23 7/16 (REF.)
MODULE STORAGE DRAWER
WITH SLIDES. D10362
MODULE # E10359
MODULE # E10363
MODULE # E10364
MODULE # E10365
FREQ MHz
50-200 MHz
10359
FREQ OUTPUT
MHz TUNING

REVISIONS			
SYM.	DESCRIPTION	DATE	APPROVAL



ADAPTER SET #8801K (MAURY MICROWAVE)
ATTENUATOR #50-20 (WEINSCHEL ENG.)
03B1062 (2) (MCL)
03B1063 (2) (MCL)
27C1130 (3000-30 NARDA)
27C1131 (3000-40 NARDA)
27C1132 (3002-30 NARDA)
27C1133 (3002-40 NARDA)
LOW PASS FILTER #TLC 20-3EF1 (TELONIC)
LOW PASS FILTER #TLC 30-4EF7 (TELONIC)
LOW PASS FILTER #TLC 75-6EF1 (TELONIC)
LOW PASS FILTER #TLC 125-6EF1 (TELONIC)
LOW PASS FILTER #TLC 316-6EF1 (TELONIC)
LOW PASS FILTER #TLC 700-6EF1 (TELONIC)

LOW
TE
26
B



SS FILTER #TLS 1225-5EF1
NATION #160-500 (SIERRA)
62 (TERMINATION #160B-300 SIERRA)
61-3 TUBE PULLER (MCL)

REFERENCE
ISSUED
APR 06 1970
PRINT

ITEM	PART NO.	QTY.	DESCRIPTION	MAT'L.	MAT'L. SPEC.
			LIST OF MATERIAL		

NEXT ASS'Y	USED ON	NEXT ASSY	FINAL ASSY
APPLICATION		QTY. REQ'D.	

DO NOT SCALE:

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES FRACTIONAL ±
DECIMAL ±
ANGULAR ±

MATERIAL:

SPEC:

FINISH:

SPEC.

DRAWN	W.B	6/7/69
CHECKER		
MECH. ENGR.		
ELEC. ENGR.		
PROJ. ENGR.	AA	6/7/69
CHIEF ENGR.		

STORAGE/ACCESSORY UNIT
LAYOUT & OUTLINE

SCALE: HALF | WEIGHT ACT. CALC.

MCL MICROWAVE CAVITY LABORATORIES
LAGRANGE, ILLINOIS

D10361

SHEET OF